AMATEUR RADIO

FEBRUARY 1994
Volume 62 No 2

Journal of the Wireless Institute of Australia

IN THIS ISSUE:

Review of the ICOM IC-707 HF Transceiver
Making Air Wound Coils for HF
Up-to-date Amateur Examiners Listing

and lots more

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All contributions and correspondence concerning the content of *Amateur Radio* should be forwarded to:
Amateur Radio
PO Box 300
Caulfield South VIC 3162

REGISTERED OFFICE
3/105 Hawthorn Road
Caulfield North VIC 3161
Telephone: (03) 528 5962
Fax: (03) 523 8191
Business Hours: 9.30 am to 3 pm weekdays

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Cover

Are you ready for the 1994 John Moyle Memorial Field Day (see page 43 for the date and rules)? The front cover shows John Bennett VK3ZA operating during the 1993 contest. Set up inside his ex Ambulance, affectionately known as "The Beast", John operated from Macarthur, in south western Victoria, in the portable, six hour, single operator, HF, phone section.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Representing the Australian Amateur Radio Service

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All Mail to:
PO Box 300, Caulfield South, Vic 3162
Telephone: (03) 528 5962
Fax: (03) 523 8191

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Federal QSP

As I write this the bush fires in NSW are still burning and, while the initial danger has passed, if there is a change in the weather then the situation can rapidly worsen. It is at times of natural disaster such as this that WICEN often comes to the fore. You may have noticed that the January issue of *Amateur Radio* featured a WICEN operator on the cover. The event featured in the photo was the 1992 Murray River Canoe Marathon, an event for which communications is provided by WICEN operators, primarily from Victoria.

As part of its preparation and training for emergency operations, WICEN in all states mounts training exercises, usually by providing communications in support of events of various kinds, although sporting activities seem to be the primary source of suitable events for training purposes. For many members of the public, WICEN, through its presence at these events, is often the visible face of amateur radio. The community service provided by WICEN operators during times of emergency is invaluable in those situations but often goes unheralded in the community at large. We within the amateur radio movement hear of the WICEN involvement, through articles in *Amateur Radio* and items on our Divisional news broadcasts, but in many instances the general public hears very little, if any, of the involvement of amateur radio in these situations.

Neil Penfold wrote in the Federal QSP column of the November issue of *Amateur Radio* of how we should be able to overcome the impediments which are put in our path. Part of that process will be through the support of the community. We must become more visible to them and let them see that we can make a worthwhile contribution to the community and are thus deserving of their support.

One way in which we can do this is to become involved in WICEN and, through its activities, promote amateur radio as being a valuable part of Australian society. From my own experience I can tell you that it is an enjoyable experience participating in these exercises and one feels better suited to be able to positively contribute in the event of an emergency.

If this looks like a plug for WICEN then it is meant to be in part. But WICEN is just one example of how amateur radio can be given a public face. As we all look for new challenges in amateur radio this year, give some thought to how you can help give amateur radio a more discernible public face and good public image. Think of how amateur radio can be seen to contribute to our society for the benefit of all. Having thought of what you might do, it is then the time to act and put your ideas into practice. Get the help of your local radio club, other fellow amateurs or your local Division. Let's all help amateur radio, and ourselves as amateur radio operators, to be recognised in the wider community for the good citizens we are.

Kevin Olds VK1OK
Federal President
ar

Editor's Comment

Centenatorial

My sincere apologies for the title! How else can one describe a one-hundredth editorial? The first effort by your present editor was back in July 1984, entitled "New Faces". It referred to the illness of the previous editor (Gil Sones VK3AUI) which had caused the job to land in my lap, and the numerous changes in Federal Councillors and others which had occurred at the 1984 Federal Convention. I am happy to confirm that Gil, hale and hearty, is still a member of the Publications Committee, but has no wish to be Editor again! There must be a reason for that!

Those of you with a mathematical bent will have observed that in nine and a half years it should have been possible to write 114 editorials. Why only 100 until now? The reason is simple. In most years there was at least one guest editorial by someone of note, and in August 1984 there was no editorial. New to the job, I hadn't written one, so soon after the first! More recently there was discussion as to whether I should write any more at all! But here we are, with the one-hundredth Comment and, maybe, still yet more to come! It seems certain that no previous editor of *Amateur Radio* has scored such a century.

What have those 100 Comments had to say? One theme that cropped up more than once was the FUTURE of the WIA. Would you believe that four editorial headings even included the word "Future"? Perhaps more than half of my editorial verbiage has been directed towards the well-being of the WIA, and THEREFORE of amateur radio in Australia. Some people might suggest that I am obsessed by the need for a strong WIA. Certainly I am convinced of its necessity.

Since the age of 18, I have been a member of the WIA; without a break, since 1945! Next year I will have been a member for 50 years. It will be two

Continued on page 49

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers			Weekly News Broadcasts		1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Secretary Treasurer	Christopher Davis Hugh Blemings Don Hume	VK1DO VK1YYZ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm.	(F) (G) (S) (X)	$70.00 $56.00 $42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Secretary/ Treasurer (Office hours	Terry Ryeland Roger Harrison Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2ZTB	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24,950, 28.320, 52.120, 52,525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) (G) (S) (X)	$66.75 $53.40 $38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer Office hours	Jim Linton Barry Wilton Rob Hailey Tue & Thur 0830-1530	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Secretary Treasurer	Ross Marren Lance Bickford David Travis	VK4AMJ VK4ZAZ VK4ATR	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Bob Allan Maurie Hooper Bill Wardrop	VK5BJA VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East. ATV Ch 34 579.000 Adelaide. ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) (G) (S) (X)	$70.00 $56.00 $42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Secretary Treasurer	Cliff Bastin Ray Spargo Bruce Hedland-Thomas	VK6LZ VK6RR VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) (G) (S) (X)	$60.75 $48.60 $32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Secretary Treasurer	Andrew Dixon Ted Beard Peter King	VK7GL VK7EB VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) (G) (S) (X)	$69.00 $55.65 $40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).						

Note: All times are local. All frequencies MHz.

Membership Grades

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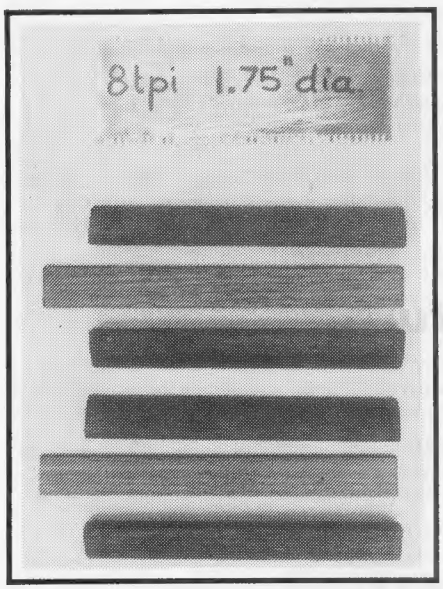
Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Making Air-Wound Coils for HF

Drew Diamond VK3XU describes how to make high-Q coils that are as good as commercial coils.*

We have all admired those photographs of antenna couplers and power amplifiers with Air-Dux (TM) or B&W (TM) air-wound coils. By using the minimum amount of former for support material, they look, and are, efficient. Not many years ago we could order Australian made equivalents from the William Willis Co who, sadly, are no longer trading. At the time of writing, there is no known local supplier. Although they may be odered from overseas, the landed cost can be rather high.



Template and mandrel assembly

For larger coils of perhaps 10 turns of 12 gauge wire, a perspex rectangle may be drilled with the number of holes necessary to accommodate the helix. The coil is wound onto a slightly undersized mandrel, then removed, and threaded or 'screwed' onto the former (see Ref 1). However, when a larger inductance involving tens of turns of smaller gauge wire is required, this technique is rather awkward and time consuming, and the results are not always as good as one would wish.

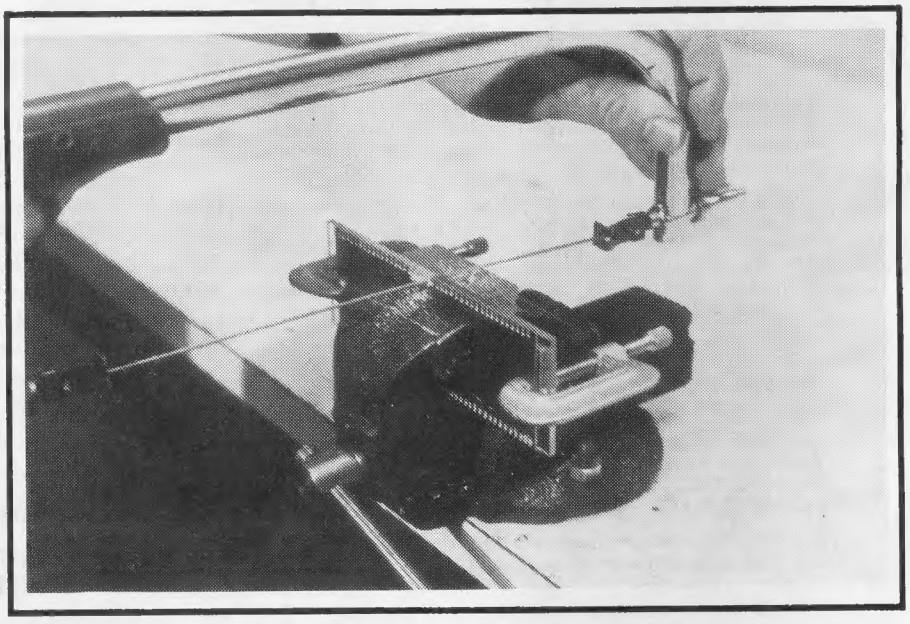
Here is a method that allows the home brewer to fabricate high-Q coils to requirements. The coil is supported upon a rectangle of perspex, or other low-loss material, such as fibre-glass circuit board with the copper removed. Rather than have the turns running through holes they are fixed upon a rack or comb cut along each edge of the former. In the example shown we make a near equivalent to the B&W type 3022, which is a 20μH coil of 40 turns of number 16 B&S, 8 turns per inch, 1.75 inches diameter. A template is recommended if you plan to make more than one coil of a specific diameter. Use brass sheet if you can get it, otherwise steel of about 18 gauge. Carefully, and as accurately as you can, mark out the cutting points for the two racks. A black felt-tip pen makes a good background medium for marking out. Remember to offset one rack by exactly one half of the pitch. In this example the pitch is 8 tpi, so the offset must be 1/16".

A hack-saw frame fitted with one or two blades, according to wire size or, better still, an Abrafile rod-saw (available from engineer's tool suppliers and comes with three blades and clips to suit an ordinary hacksaw) may be used to cut the rack. Take your time and cut each slot to exactly the same depth, as evenly spaced as possible. Clean up the burrs with a smooth file. Cut a rectangle of perspex to size, then sandwich the perspex and template together. Fix in place with two small G-clamps (cramps?). Then mount the work in a vice, and carefully cut each rack into the perspex.

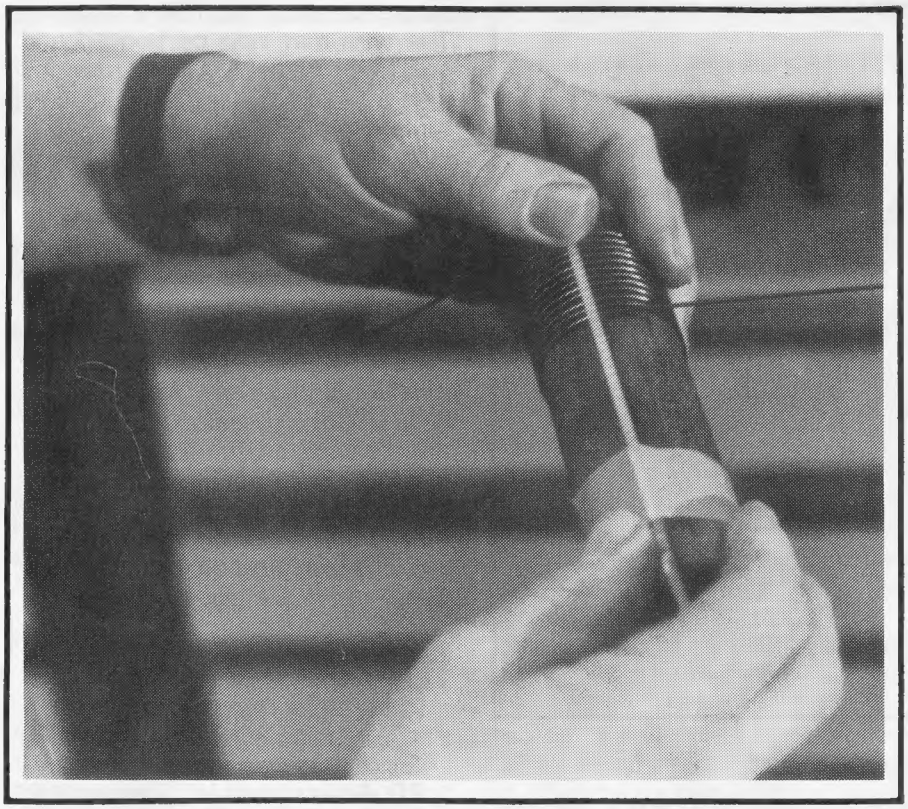
"Here is a method that allows the home-brewer to fabricate high-Q coils . . ."

Cut a length of suitably sized quad timber into four equal pieces, slightly longer than the planned coil length. Plane a small bevel along each edge. From thin plywood make a pair of spacers to fit between the quads. The spacers should be about an inch longer to provide a 'handle' and so allow you to remove them when the coil is wound. Rub a little linseed oil into these parts to make them more slippery.

When you are ready to wind the coil, position the four quads and their spacers onto the perspex former, then



Cutting the rack



Winding the coil

temporarily wrap a length of tape around the assembly to hold the job intact in order to receive the coil. Roughly calculate the length of wire required. In the example above it will be pi times the coil diameter times the number of turns; 3.14 × 1.75 × 40 = 220 inches. Unwind, say, 240 inches (20′) of wire and clamp the spool in your vice. With a suitable tool grip the far end of the wire and give it a firm stretch to remove any small wrinkles. The ends of the winding must be anchored by passing the wire through a hole, or simply by bending the wire into a U and seating it firmly down into a spare groove for the purpose.

Whilst maintaining tension on the wire, wind the coil onto the former by walking towards the vice. Remember to observe the winding sense. Make sure the wire seats nicely down into each groove of the rack. When a few turns have been wound on you can remove the tape and complete the winding. Apply a narrow fillet of epoxy glue along the two racks to cement the winding in position. Take

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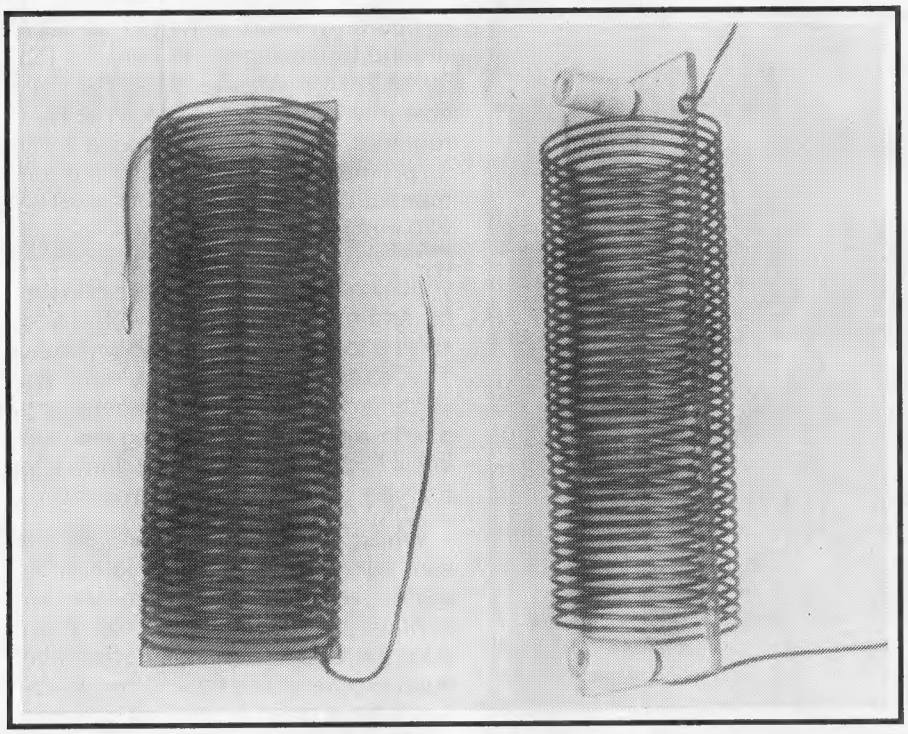

Completed coils

care that no glue finds its way onto the quad (the bevel on each of the quads should dodge this problem). Immediately hang the assembly in the vertical position. Finally, when the glue has set, grip the spacers in a vice and carefully pull one out, then the other.

If taps are required, form a spade on the tapping wire by flattening the end with a hammer. With pointed long-nose pliers bend a loop in the spade to match the coil wire diameter. The wire may now be hooked and soldered onto the coil at the requisite spot without risk of shorting adjacent turns (Ref 2).

The enamelled wire coil shown in the example has a measured Q of 350 at the 2.5 MHz test frequency. Unless it is done properly silver plating the coil wire has little benefit and may actually increase coil losses (Ref 3). Plain, enamelled or tinned copper is entirely satisfactory for amateur applications. Wire of 12, 16 or 18 B&S may be obtained from wire and insulation merchants, auto electricians and some electronics suppliers. Ordinary single-strand electrician's wire, stripped of insulation, or 'junked-but-good' power transformers, are also a good source.

References

1. Radio Communication Handbook; RSGB, 4th edition, P13. 36.
2. Tapping Air-wound Coils; Technical Topics, Rad Comm, May '93.
3. RF Performance of Electroplated Conductors; Fowler, A.M., EA July 1970.
4. Constructing Air-wound Coils; Johnson, W7KBE, Ham Radio (USA), Aug. '84.

* *'Nar Meian' Gatters Road, WONGA PARK, 3115.*

ar

WIA News

JOTA '93

More than 15,000 Scouts and more than 8000 Guides took part in the 36th Jamboree of the Air (JOTA) last October, with the assistance of more than 1300 amateurs putting some 650 stations on the air.

These statistics come from the report on Australian participation in the 36th JOTA over 16-17 October 1993. Compiled by Peter Hughes VK6HU, the 30-page report has been distributed to the National Chief Commissioner, the World Bureau, the International Commissioner, the Department of Transport & Communications, National JOTA Coordinator for New Zealand, the Federal WIA and various JOTA coordinators and consultants.

For the 36th Jamboree, a total of 652 stations around Australia participated, up from 604 in 1992 and one down from 653 in 1991. The best participation in recent years was 676 stations in 1990. A total of 1339 callsigns participated.

Of Scout Groups around Australia, 974 took part, while 833 Guide Units joined in, with a total 15,367 Scouts and 8181 Guides taking part. While Scout Group and Guide Unit figures are slightly down on 1992 participation, the numbers of Scouts and Guides who participated are much greater than in 1992.

The total number of contacts made was 6878, with Queensland topping the score at 1628 contacts, just ahead of NSW with 1615. Victorian JOTA stations managed a total of 1345 contacts, ACT 291, South Australia 584, Western Australia 952, Tasmania 305 and the Northern Territory 158.

Overseas contacts were made with Antarctica, Indonesia, New Zealand, USA, Hong Kong, Saudi Arabia, England, Poland, Malaysia, Phillipines, Russia, Italy, Japan and the Pacific Islands.

Contacts were made by almost every mode available to amateurs, including SSB, CW, FM, ATV, RTTY and packet.

More Unbelievable VHF/UHF Propagation?

Gordon MacDonald VK2ZAB tells us about his recent mysterious experience.*

Now that the credibility of Amateur VHF/UHF contacts via reflections from aircraft seems to have been reluctantly accepted by the amateur fraternity, it seems like a good time to test the reaction to yet another example of odd(?) propagation at VHF.

The Happening

On Sunday evening, 2 January 1994, I was tuned to 144.1 MHz, turning the beam and calling CQ in various directions in the hope of making contacts which would add to my score in the Ross Hull contest.

It had been a good day. Earlier in the afternoon I had made a couple of 2 m SSB contacts with ZL via what seemed to be sporadic E and there had been contacts to Lismore, Brisbane and Tottenham as well as several at distances up to about 300 km.

Rod VK4KZR had told me earlier that there had been 2 m tropospheric contacts made from southern VK4 to as far north as Cairns and Henry VK2ZHE in Port Macquarie had noted the presence of a coastal duct extending down the south coast of VK2.

At about 1120 UTC, with my beam south west, I heard snatches of conversation with the magic sounds VK4 and ZL! I turned the beam to align it for best strength in the direction of these signals.

I was surprised to find that this was on an indicated bearing of 65 degrees East of North. That is neither in the direction of VK4 nor in the direction of ZL! (I found later that the bearing was 75 degrees because my beam had shifted in the rotator clamps by 10 degrees due to strong winds earlier. A fairly common occurrence at this location).

The point was, of course, that the signals, which turned out to be those of Rick VK4HF located some 70 km north of Brisbane, were arriving from somewhere out in the Pacific and not from VK4. I turned the beam to check this point. I couldn't hear the ZL he was in contact with, but it was Nick ZL1IU whom I had contacted earlier in the day. The beam was turned to check this point also. Could this be a hoax? I thought it might be but I couldn't risk not finding out for sure, so I called VK4HF on the indicated bearing.

Contact Made

After several attempts contact was established with VK4HF at 1131 UTC. (He thought I wanted to contact the ZL and had to be convinced that I was after him!). He was S4 [16-18 dB above the noise] and steady. He gave me S4 also. I emphasised the unique nature of the contact and asked Rick to stick around while Henry VK2ZHE, who could hear him weakly, attempted to make contact from Pt Macquarie. However, this attempt failed. Henry couldn't turn his beam out to sea.

Rick called Bruce VK4BOO to see if he could contact me. We couldn't make it. I phoned Ross VK2ZRU at this end but he had no luck either. VK4HF and I remained in contact off and on until 1150 UTC and exchanged a few words after that. He was still in contact with ZLs. I continued to monitor his signal which remained quite steady apart for a couple of short sharp fades, until it slowly faded out at 1243 UTC. The following night [Monday] ZLs were again in contact with VK4s and I heard a VK4, albeit weakly, on the same beam heading of 75 degrees. I think it may have been VK4HF again.

Propagation Mode?

This contact was so unusual that it demands an explanation and no doubt there will be many theories. Let's hear them by all means, but first consider mine. Here it is with some history and statistics first:

- ★ This is not the first time that this phenomenon has been observed. Several times during the past 13 years, when it has become known that VK4s were working ZL on 2 m, I have turned my beam towards ZL to see if I could hear them. On passing through a heading somewhat north of east I have heard VK4s, albeit fleetingly. On each occasion I have turned my beam on VK4 and called but to no avail.
- ★ VK4HF runs 100 watts PEP to a 10 element Yagi and is located about

WIA News

Amateur History

The development of a comprehensive oral history of amateur radio in Australia has been given approval in principle by the Federal WIA Board.

As a service to the Institute, John Edmonds VK3AFU/VK3ATG has undertaken to collect and compile historical information as we approach our centenary as a hobby. It is early days yet for John as it will be a lengthy and arduous task. Good luck, John!

Advertising on Packet

The Federal Office notes that advertising equipment for sale has appeared on the amateur packet radio network. The 1993 Call Book, under DoTC information on the Use of Stations (a) P.4, was corrected by the Department in the 1994 Call Book under Use of Stations (a) P.4, which does NOT allow for stations to be used for "financial gain" and this has been confirmed by the Department.

70 km north of Brisbane at an elevation of about 1000 ft with a good take off to ZL.

★ VK2ZAB runs 400 watts PEP to four 13 element Yagis from Berowra Heights, a northern suburb of Sydney. The antenna is about 750 ft ASL and the take-off to the east is good.

★ Coastal ducts had been observed in both VK2 and VK4 and ZLs were in contact with VK4 via a duct at the time the VK2/VK4 contact was made.

★ ZLs could not be heard at the time. This may be a red herring since they could be heard the next night at the time when VK4 was heard on the same strange bearing.

So what is the propagation mode? Ross VK2ZRU suggested an ionospheric "hot spot" out over the Pacific presumably giving rise to "backscatter". This idea seemed plausible at the time but after thinking about it I find that I cannot accept this idea because there was no sporadic E evident at the time, although it had been earlier in the day. The evidence of past observations would require that any hot spot form in the same place each time. An unlikely happening.

In my view all the facts suggest the presence of a large static reflector located in the Pacific Ocean at a bearing of 75 degrees east of north from my location and on a line from southern VK4 to ZL.

Such an object does exist, in the form of Lord Howe Island. Check your own map to verify.

Lord Howe is about 780 km from me and would not normally be illuminated by my signals. This would require a duct which was there at the time in question. It would also be illuminated by signals from VK4 in contact with ZL via a duct since it is on the way. Lord Howe is mountainous with large sheer rock faces. An ideal reflector and much bigger than an aeroplane.

So there's my theory, a Bistatic Radar type of reflector all over again, just like reflections from aircraft only much bigger. Curse me, but I simply cannot resist pointing out that there are no known active volcanos in the area either!

*59 Wideview road, Berowra Heights, NSW 2082

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EQUIPMENT REVIEW
ICOM IC-707 HF All Band Transceiver

Ron Fisher VK3OM

With the introduction of the IC-707, ICOM now has the largest range of HF transceivers on the market. The IC-707 is also the lowest priced HF transceiver in the ICOM range with a retail price of $1867.

It is interesting to see that ICOM have chosen not to miniaturise their latest model to compete with Kenwood's TS-50S but to keep to the standard ICOM size that started with the IC-735 and continued through the IC-725/728 series. The 707 is, however, slightly lighter with a weight of 4.1 kg as against 4.6 kg for the 728 and 5 kg for the IC-735.

So, just what do you get and what don't you get in the IC-707? First off, you get a 100 watt output transceiver that covers all amateur bands up to 29.7 MHz. You also get a full general coverage receiver that tunes from 30 kHz to 30 MHz. Modes included as standard are CW, USB & LSB and AM (both reception and transmission). FM can be included in the IC-707 by installing the optional UI-9 FM unit. One interesting feature of the transceiver is a front panel mounted speaker. Not a common thing in HF transceivers. I can think of only four others that have had front mounted speakers over the years. How many can you come up with? The answer is at the end of the review.

Next, you get two VFOs, and 32 memory channels, which include five split operation channels and two band scan limit frequencies. You also get ICOM's great band stacking register which brings you back to the same frequency you have used on each band. As is usual all memories are fully tunable so, in effect, you have 34 separate VFOs. You get a big, bright multi-function LCD display

Operator's view of the compact ICOM IC-707.

which incorporates a bar-graph meter indicating "S" units on receive and relative power output on transmit. Frequency readout is to 100 Hz but there is no indication for RIT offset; not even the main frequency readout shifts. The RIT gives an offset of +/– 1.2 kHz. The receiver front end has a 10 dB pre-amp and a 20 dB attenuator.

Now to the "what you don't get" department. The first thing noted when I put the transceiver on my desk was the lack of a tilt bail to lift up the front of the transceiver. Now I think that's really stingy. You can actually buy a carry handle to screw onto the side of the cabinet but a tilt bail isn't even offered as an option. Compared to the next level of ICOM transceiver, the IC-728, there is no transmitter speech compressor, no receiver pass-band-tuning and no AGC fast/slow selection. There is no RF gain control but then there is none on the 728 or even on the next up again, the 737.

The noise blanker is non-adjustable. The metering is very basic with only relative power showing on transmit. There is no ALC or SWR metering. Well, I guess if you purchase a basic priced transceiver you have to give something up.

The IC-707 On The Air

After propping up the front of the rig to get a better view, I started to tune around. Might I suggest that a couple of rubber buffers glued under the front feet would make an enormous improvement, but on with the tests. The first thing noticeable at switch-on is the bright display. The numerals of the main frequency are rather different from what we have become used to. They are quite artistic. Have a close look at the front panel photo. The front mounted speaker sounds quite good but, as usual, a high quality external speaker sounds better.

The internal speaker handled the full audio power output of the transceiver very well with no discernible rattles. The tuning control is typical ICOM, superb! Tuning rate in SSB and CW is ten Hz per step or two kHz per knob revolution. This gives very smooth and effortless resolution of signals. With the AM or FM mode selected the tuning step increases to one kHz or 200 kHz per knob revolution. I believe this is too fast and that AM and FM should tune in 100 Hz steps thereby giving 20 kHz per knob revolution. It is possible to select 10 Hz steps for AM tuning via the TS button but then this is too slow.

The memory system is simple to use and most effective. In the usual ICOM style all memories are fully tunable and the mode can also be changed. This, along with the Band Stacking Register, makes for a very versatile tuning system.

Received audio quality was very acceptable on SSB and reasonable on AM. I thought the AGC decay time on SSB was too fast and, without an RF gain control to set a threshold level, there is not a lot you can do to improve things. Also, with no band-pass-tuning there is not a lot you can do about interference. Perhaps a thought. Where the cost of fitting band-pass-tuning exceeds the budget on a low priced transceiver, why not include an old fashioned tone control? It would need to provide a very sharp cut from 3 kHz down but with the availability of active filters these days, I doubt that the cost would be excessive.

The bar-graph "S" meter worked well, within its capabilities. If the number of "bars" was doubled it would, however, be better. As we will later see, the "S" meter is quite generous but, at the same time, very vague.

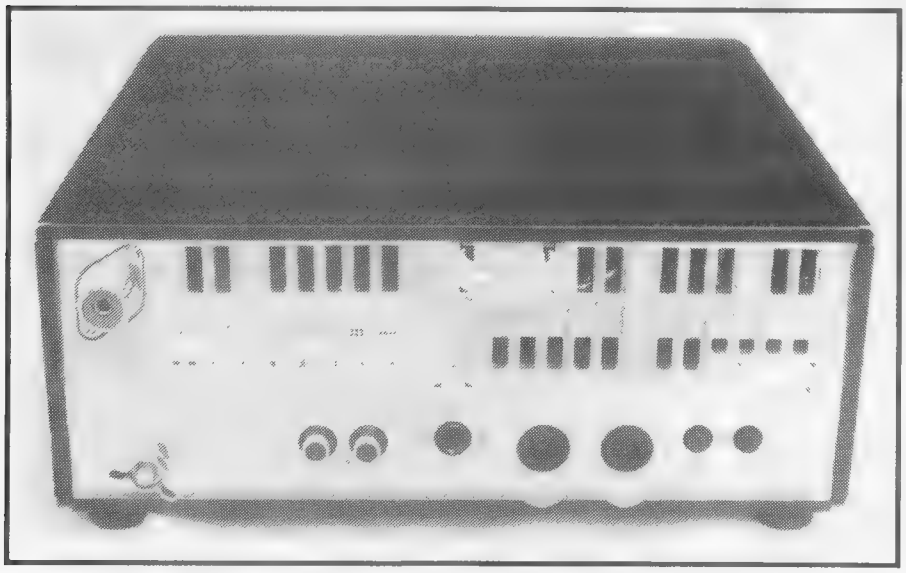
CW reception with the standard SSB filter was good. Unfortunately, none of the optional CW filters was included with our review transceiver.

Mode selection has returned to the old IC-745 system. There is one button and pushing it brings up each mode sequentially. While this saves a few buttons on the front panel, I found that the mode I needed always required several button pushes to get to. You do get used to it, though.

RIT on the IC-707 is very basic. When selected, an "RIT" indicator comes up on the main display but there is no frequency display to show the amount of offset and even the main frequency display stays put. There is no transmitter offset tuning.

The noise blanker is also basic. You can either have it on or off. However, it works very well on car ignition noise which is no doubt what it will be mainly used on. Its effect on power line noise appeared to be minimal. There was no noticeable effect on receiver performance with the blanker switched in.

Overall, the receiver performance would have to be rated as excellent. Tuning is very smooth, band changing simple and straightforward, received audio quality through the internal speaker is good and, through a good quality external speaker, is excellent. There is plenty of gain and, even on a small antenna, the receiver sounds lively although I found that I preferred to have the preamp in most of the time and the attenuator was not



Rear panel view of the IC-707.

used at all. Receiver front end performance was rated as excellent particularly from the strong signal handling point of view.

Connectors

Rear panel interfacing is very complete. There is a socket for the AT-160 or AH-3 automatic antenna tuners. Two DIN sockets, one seven pin and one eight pin, allow connection to, and control of, ICOM linear amplifiers, etc. Control of home-made or other commercial linears is from two phono sockets, one for relay control, the other ALC input. A standard 6.5 mm jack is used for Morse key connection. Two 3.5 mm jacks connect to an external speaker and to a computer interface unit. A standard six pin plastic connector is used for the 13.8 volt DC input.

Now, over to the transmit side. The IC-707 is supplied with an HM-36 microphone. This appears to be the same as the old HM-12 that has been supplied with ICOM equipment for the last ten years or so. The only control that requires setting for SSB operation is the microphone gain control and I must say that the instruction manual is not all that helpful in doing this. I will quote what they say. "Adjust the (MIC) control to the 10 — 12 o'clock position when using the supplied hand microphone. Suitable position differs according to the connected microphone. When rotated too far counterclockwise, output power becomes too low. When rotated too far clockwise, transmit audio may distort." So there you are, good luck.

After carrying out many on air tests, I found that good punchy audio was produced with the gain control as high as the three o'clock position but this would depend on your actual voice level. When adjusted correctly, the audio quality was reported as slightly restricted but quite good. I also tried my SM-6 desk microphone with good results but, as this has a built-in pre-amplifier with adjustable gain, it was a little tricky to get things right.

After extended transmit tests, the transceiver was still cool. The internal cooling fan is very effective. The photo shows this under the final unit sucking air from under the cabinet and blowing it out at the rear.

Frequency stability and dial readout accuracy were right up to the usual ICOM standards. Total drift did not exceed 50 Hz at any time and the dial readout was well within the resolution of 100 Hz.

Finally, the transmitter was checked out in the CW mode. There is, of course, no built-in keyer as with some of the more expensive models. You will have to supply your own. Also, the IC-707 does not have full break-in operation. However, there is an excellent semi break-in system. Unfortunately, the break-in time delay is not externally adjustable. You will need to remove the bottom of the cabinet and adjust a rather small preset potentiometer. The side tone level preset is near the break-in control but, once set, the level is controlled with the normal front panel audio gain control. CW keying was very clean with no clicks audible on a very strong signal. With either of the optional CW filters installed, the casual CW operator should be very happy

The IC-707 On Test

The usual series of tests was carried out starting with transmitter power output. Power output can be set at any level between full power and about five watts minimum with the RF PWR control.

Power Output CW Mode.

Band	Power	Current
160	115 watts	17.0 A
80	120 watts	16.5 A
40	120 watts	16.0 A
30	120 watts	15.5 A
20	120 watts	16.0 A
18	120 watts	18.0 A
15	122 watts	17.5 A
13	122 watts	15.5 A
10	115 watts	17.0 A

PEP output in SSB mode was about the same as above, as indicated on my monitor scope. Minimum power output was spot on five watts. Power output on AM was 25 watts and 100% modulation could be achieved at this level.

The specification does not give a figure for SSB IMD, so our usual tests were carried out. We came up with a figure of -30dB which is actually a shade better than the IC-737 tested last year. I wonder why ICOM have dropped these figures from their specs as it seems that they really haven't anything to hide. All of the above tests were carried out using a 13.8 volt regulated power supply.

Receiver Tests

The "S" meter calibration was checked first. There are eight bars so it was difficult to come up with exact levels as there was quite a bit of overlap.

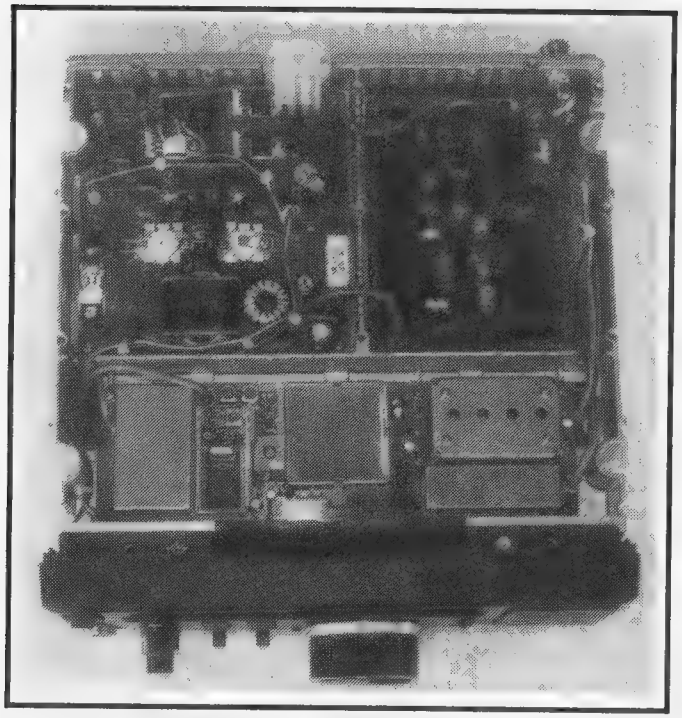
	Preamp Out	Preamp In
S1	2.2/2.8 μV	1.2/1.5 μV
5	6.0/15 μV	2.0/3.0 μV
9	30/140 μV	7.0/80 μV
+20	220 μV	85 μV
+40	1300 μV	600 μV
+60	10mV	1.5 mV

As can been seen from the above, "S" meter readings need quite a bit of interpretation but then I guess that applies to most "S" meters anyway. The above tests were carried out on 14.2 MHz. Preamp gain was measured at 11 dB and the attenuator at -20dB. AGC threshold was about 1 μV and the receiver could produce maximum audio output with an input of 0.8 μV.

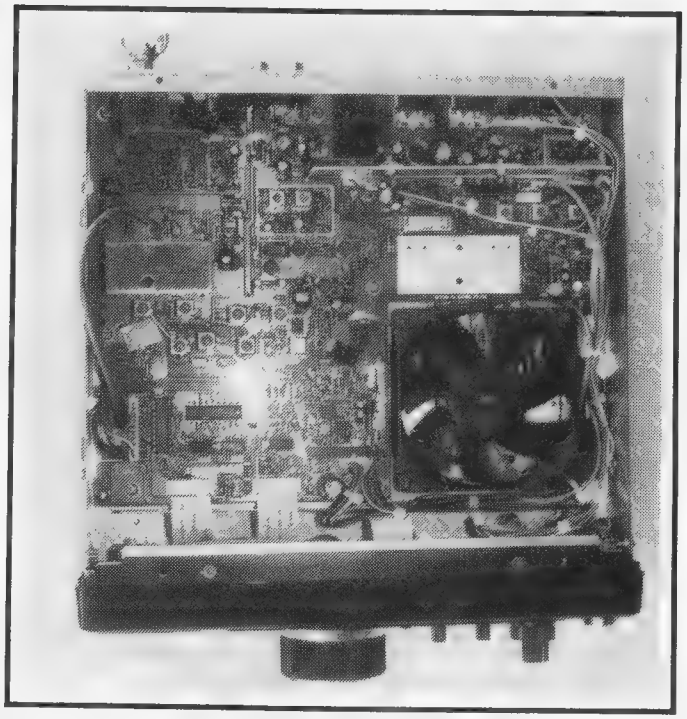
Next the receiver sensitivity was checked. The ICOM specification is a little confused, stating less than 0.16 μV for 10 dB S/N in the handbook and 0.16 μV, but no S/N mentioned, in the colour advertising leaflet. Assuming the 10 dB figure, I measured 8 dB signal to noise at 0.16 μV input. Interestingly this is the same figure that came up with the IC-737 reviewed in the August 1993 issue of AR.

AM sensitivity measured an excellent 1 μV for 14 dB S/N with 30% modulation, bettering the specified figure by a wide margin. Again, all these measurements were taken at 14.2 MHz. SSB bandwidth at the -6dB points was 2.2 kHz with these occurring at 300 Hz and 2.5 kHz. The AM bandwidth was only slightly wider although, of course, there are two sidebands involved here. AM audio response -6dB points were at 150 Hz and 2.6 kHz. At 3 kHz this was down to -15 dB. It appears that the response of the audio amplifier is cut sharply above 2.6 kHz.

My next test was audio power output and distortion on both SSB and AM. Maximum power output into 8 ohms was 2.9 watts and into 4 ohms, 4.7 watts. However, this was



Top view of the IC-707 with the top cover removed.



Bottom view of the IC-707 showing the effective cooling fan.

with around 25% distortion. At 2 watts output distortion was down to 10% and with 0.25 watts this was down again to a very creditable 0.5%. ICOM specify audio output at "more than 2.6 watts with an 8 ohm load" but do not mention distortion. On this basis the specification is met, but at 25% distortion.

Distortion on AM varied with frequency and modulation depth with higher distortion occurring at lower frequencies and high modulation depth. With 80% modulation at 200 Hz, distortion was 10% but with 30% modulation at 1 kHz this was down to 1.5%.

Finally, the current drain on receive was measured. With no audio output this was 1.05 amps and with full audio output it was 1.4 amps. Generally, these tests showed that the IC-707 performed very well.

I would like to see better quality AM reception both in terms of distortion and frequency response from Japanese transceivers. In this respect, the IC-707 is no worse than average but all could be a lot better. In terms of weak signal reception, the IC-707 would be very little behind its higher priced relatives. It would only be when interference became a problem that the 707 would be left behind.

The IC-707 Instruction Manual

In my review of the IC-737 I stated that most manuals seem to run to about 60 pages. With the IC-707, ICOM have proven me incorrect. This one is only 45 pages. However, I guess with a basic transceiver, there is less to cover. That said, they do cover the subject quite well. I like the numerous little explanation boxes such as "What is the Preamp", "What is the attenuator", "What is the RIT function", etc. New amateurs should find these most enlightening. Operating instructions are in the main well covered. However, there is some strange English in some sections.

Note my earlier comments on the microphone gain control setting procedure. Again there is no technical description and not even a circuit diagram. The manual does have a full list of the wide range of options available for use with the IC-707. These range from power supplies, and external speakers to automatic antenna tuners and linear amplifiers.

The IC-707 Conclusions

The new ICOM 707 is in direct competition with the Kenwood TS-50S and, to a lesser extent, the lower priced Yaesu FT-747. This is possibly the most competitive section of the amateur market. If you are looking for a normal sized transceiver with excellent ergonomics and good quality transmitted and received signal, the IC-707 must come into consideration. It would be ideal as a mobile/portable rig, a first HF transceiver or a second rig as a backup in the home shack. In any situation the 707 would perform in an excellent manner. Don't forget you may need a 20 amp DC power supply which would add to the cost. My thanks to ICOM Australia Pty Ltd for the loan of the review transceiver.

Ah, yes. The answer to our little quiz. Which transceivers have front mounted speakers?

1. The Yaesu FT-747 (bet you all got that one).
2. The SBE 33. An American partly solid state transceiver of the early 1960s.
3. The SBE 34. A later model of the above.
4. The Swan 400. An unusual American transceiver that had a front panel speaker but no VFO. You had to add an external unit.

Well, who won the prize? Perhaps there are others with front speakers I haven't heard about.

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Technical Abstracts

Gil Sones VK3AUI

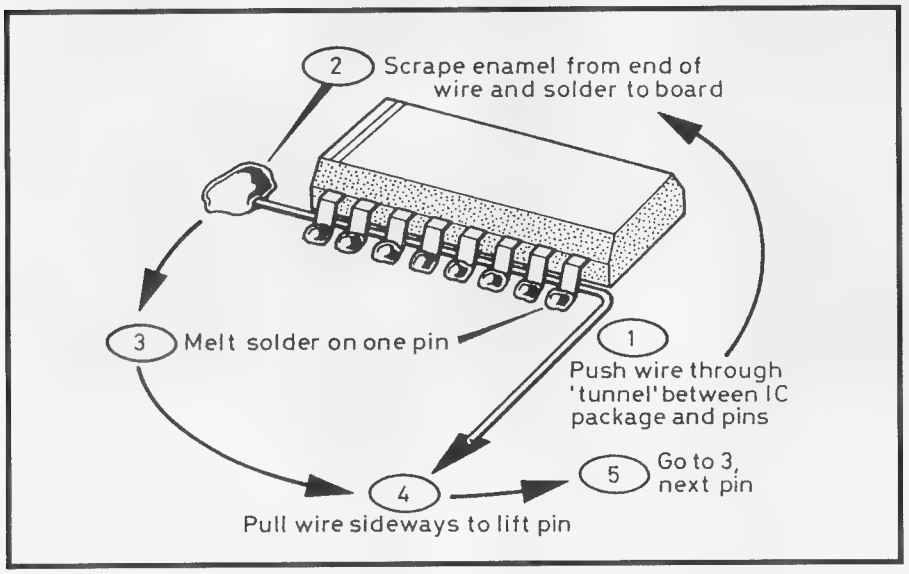
2
Scrape enamel from end of wire and solder to board
3
Melt solder on one pin
1
Push wire through 'tunnel' between IC package and pins
5
Go to 3, next pin
4
Pull wire sideways to lift pin

Fig 1 How to remove a surface mount IC without breaking the pins.

Removing a Surface Mount IC

A neat way of removing a surface mount IC was published in *Radio Communications* for October 1993 by Ian White G3SEK. The item came via DF7IT in the VHF/UHF DXer who learnt the trick from a "Polish Guy". All you need is a length of thin enamelled copper wire — the old-fashioned brown kind with solder resistant enamel. Fig 1 shows exactly how to use the wire to "unzip" each side of the IC without breaking the fragile pins.

Tx Finger Printing

A screen photo that was almost an abstract painting attracted my attention in QST for November 1993. The photo was of the screen display of Hewlett Packard's HP89440A Vector Signal Analyser. The display had frequency displayed on the X axis with time as the Y axis. The colour of the display was a measure of the signal strength. This results in what is virtually the fingerprint of all transmissions within the band being displayed.

Faulty transmissions are graphically displayed with key clicks and splatter immediately obvious.

Mower Generator

Ron Mathers ZL2AXO in *Break-In* for September 1993 revived an old idea and used a surplus electric motor driven by a surplus motor mower engine to generate 230 VAC. Capacitative excitation of an induction motor used as a generator, or should I say alternator, is an old idea.

Ron mounted a plate vertically beneath the mower handle in the area normally occupied by the grass catcher. On this plate he mounted the induction motor with the shaft running vertically and parallel to the motor mower engine shaft. A vee belt was used to couple the mower engine to the induction motor. This was essentially shielded by the mower base plate. The mower wheels allowed the device to be moved easily.

The system relies on the residual magnetism of the rotor to initiate the build up of the magnetic field. The residual magnetism can, if necessary, be provided if needed by :-

1. Running the motor as a motor from the AC Mains;
2. Discharging a charged capacitor across the generator terminals while the machine is in operation; or
3. Momentarily connecting a six or twelve volt battery across the generator terminals with the machine at rest.

The third method is probably the easiest in most cases.

The capacitor must be made up out of AC rated capacitors such as are used for motor starting, etc.

The throttle is used to obtain the desired output voltage under load. The value of the capacitor must also be adjusted to set the frequency under no load. The value required for the motor to achieve unity power factor when running as a motor is a good starting point.

A suitable motor may be found in a surplus washing machine.

Ron was able to obtain 500 Watts from the setup. Regulation is not brilliant but is adequate for fairly constant loads.

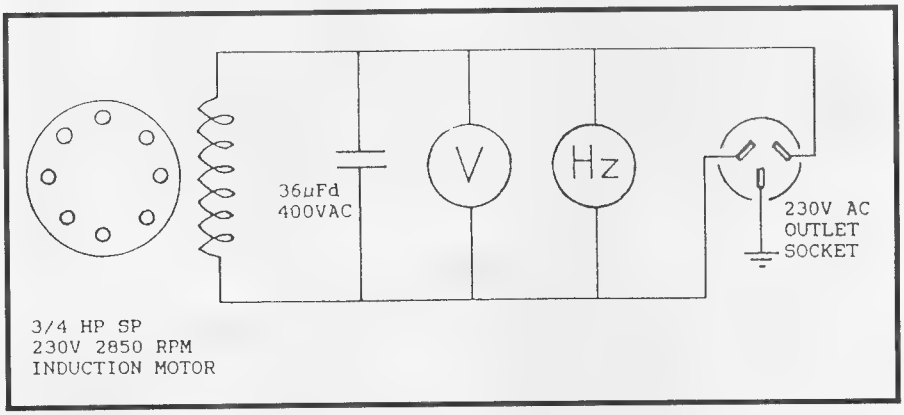

Fig 2 The Induction Generator

For those wishing to learn more a reference was given:- Basset, E. D., and Potter, F. M. '' Capacitive Excitation for Induction Generators'' Trans AIEE, May 1935, Vol 54, p 540.

The circuit of the Induction Generator is given in Fig 2. An alternative to using a motor as a generator may be an old alternator from a car. Those wishing to follow this route should be aware that automotive alternators are not intended for this sort of service and the output achieved may be disappointing. Car alternators require a considerable amount of power input at fairly high revs in order to achieve their rated output. This would be unlikely to be available from a lawn mower motor even in excellent condition. However, do not be daunted, as you may still obtain a useable output even if it is far below the maximum which the car alternator can deliver in automotive service.

Iron On PCB Resist

The item in November Technical Abstracts concerning the use of photocopier toner as PCB resist has brought news of a commercial product. Claude Palm of Palmtech wrote with information concerning a new product designed to do the job with a minimum of fuss:-

''Palmtech have a new product specifically designed for the purpose. It is called Toner Transfer System or TTS and significantly simplifies the process described in Technical Abstracts for November 1993. So much so that a ready to etch PCB can be produced in a few minutes rather than hours.

TTS consists of a paper substrate with a water soluble coating. Basically the principle is as described in Amateur Radio. A copy is made to the TTS instead of ordinary paper or fed through a laser printer. The TTS sheet can be cut to the size of the artwork and then attached to a sheet of plain paper before feeding through the copier/printer. In this way the cost is under 7 cents per square inch of board produced.

The TTS is placed against the blank PCB which is heated with an iron and then immersed in water. After a minute the TTS will release from the board and float to the surface. The board is then ready to etch. Total time 3 minutes (double for aluminium irons). Track density of 40 tpi can easily be achieved with no retouching required once the technique is mastered.

The same process can also be used with metal front panels, PCB component overlays, etc. Another method is to spray the TTS directly with a few coats of clear lacquer. When dry the TTS is soaked in water so that the lacquer film with the toner adhering to it can slide off the paper onto almost any non porous surface as a decal. As this does not involve any heat it can safely be used on plastics.

TTS retails for $29.90 in packs of five A4 size sheets with full instructions. It is available from Palmtech, cnr Moonah and Wills Streets, Boulia, Qld 4829. The phone number is 077 463 109 and the fax number is 077 463 198.''

Thank you to Claude Palm of Palmtech for that information which should be of interest to readers.

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amateur radio action

"Ηουσε αδωερτισεμεντΠ φορ Αματευρ Ραδιο Αχτιον μαγαζινε το αππεαρ ιν ΩΙΑ φουρναλ Αματευρ ΡαδιοΠ."

For subscription details to just about anywhere, phone Grant Manson on (03) 601 4222

If all this looks Greek to you, perhaps it's because you're not reading the authoritative source — Amateur Radio Action magazine... at your local news outlet every fourth Tuesday.

Random Radiators

with Ron Fisher VK3OM and Ron Cook VK3AFW

An 80 Metre Beam

Well, it is and it isn't an 80 m beam. This article describes a compact 80 m antenna that can out-perform a full size dipole.

One of the keener novices has been working with various antennas for 80 metres, including dipoles at 50 ft (1 ft = 0.305 m). [Imperial measurements are used in this article because that's what was supplied.] He has come across an antenna that he has found to be "a weapon". Judging by the stations worked and heard and the reports given it is a very good 80 m antenna. Our correspondent, who wishes to remain anonymous, claims that this antenna is 10 dB better than an inverted vee with the same centre height.

The configuration is a loop of wire in a "bow tie" arrangement with the centre held up by a central support and the four corners held by short masts. See Figs 1 and 2.

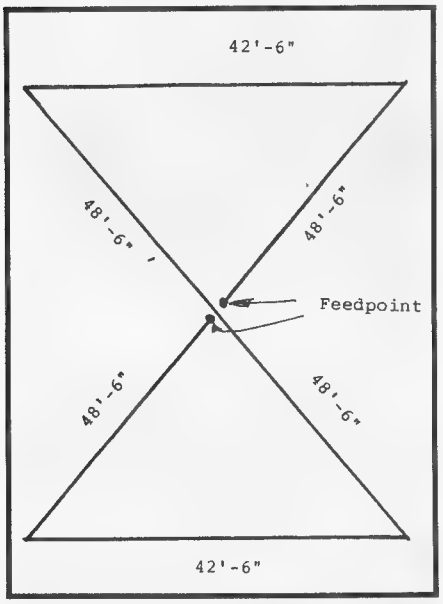

Fig 1 — Wire dimensions and layout.

The total length of wire is 1005/f where the length is in feet and f is the required frequency in MHz. The centre should be 40 ft or more high and the ends not less than, say, 10 ft. Our correspondent has the peak at 62 ft. The antenna covers an area 50 by 43 ft and is built using clothes line wire due to its ready availability and low cost. Hard drawn copper wire would be better, but it just goes to show that improvisation lives on.

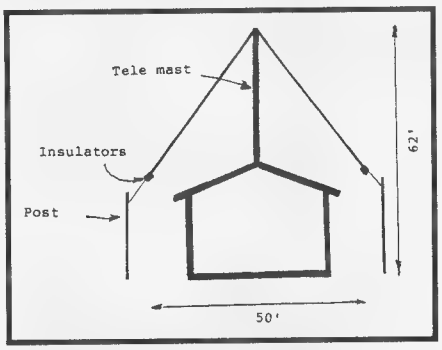

Fig 2 — Support arrangements.

The antenna was originally described in CQ magazine for February 1961. The dimensions given for 3.8 MHz were 42 ft for each side of the triangles with 42 ft spacing between the bottom wires. In CQ for July 1980, William WB0AOF describes several variations in his article, "The 80 Meter Pyramid Antenna".

It is a full wave loop, fed at the apex and gains some enhancement of signal strength at lower radiation angles by using sloping radiators. It also has less of a null off the side as compared to a dipole. WB0AOF points out that the shape of the triangles can be altered to suit the available space and central mast height. He used 46 ft sloping wires with 33 ft horizontal wires for a 50 ft mast.

Our correspondent obtained a good match from 3.500 to 3.65 MHz with a direct connection of 50 ohm line but WB0AOF recommends using a quarter wave length of 75 ohm line to match into 50 ohm line.

I decided to use a computer program, MN by Brian Beezley K6STI, to compare the pyramid with a dipole. The results are as follows:- The radiation pattern is within 2 dB of omnidirectional at a 5 degree elevation angle, whereas a dipole at 50 ft has weak nulls of 6.5 dB at the same elevation angle. The dipole has a gain of 5.2 dB straight up while the pyramid has a gain of about 4.5 dB straight up. So the pyramid wastes a little less signal in the vertical direction. Its pattern is a bit more squashed, so it has a better low angle radiation performance. The dipole is 12.4 dB down on a free space dipole at 5 degrees elevation while the pyramid is about 10 dB down, almost equivalent to doubling the transmitter power.

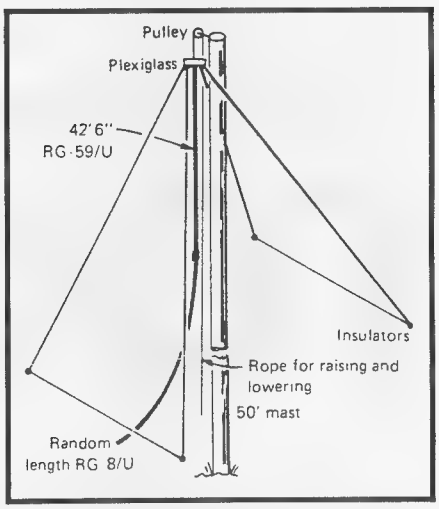

Fig 3 — An oblique view of the WB0AOF version of the pyramid antenna for 3.8 MHz.

The feedpoint impedance was calculated to be much higher than 50 ohms and some matching arrangement seems advisable. It must be said that all calculations make assumptions which may not apply in practice so the discrepancy between calculated results and those found in practice by our

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correspondents could probably be explained if carefully investigated.

What the computer program and practice have shown are:

Advantages

★ The antenna requires less ground area than a full size 80 m dipole.
★ The radiation pattern provides better local and DX signals because the radiation pattern is "squashed" from the top.
★ There is little directivity in the horizontal plane, giving no holes in the pattern.
★ Requires only one mast at least 40 ft high.
★ Could be used on several bands with an ATU.
★ Broader banded than a dipole, ie less variation of parameters with frequency changes.

Disadvantages

★ Requires a mast of significant height, ie one for which a permit would be required.
★ Requires a matching stub or balun for optimum matching. (Open wire line and an ATU could be used. This would almost be essential for multiband operation.)
★ Is more visible than a simple dipole, having 4 wires and requiring 4 short ancillary masts.

Most of us would see the advantages far outweighing the disadvantages, so if you want to have a big signal on 80 m but don't have a lot of real estate, then this could be for you.

73 from me and 73 from him.

WIA News

UK Morse Code Survey

Through late-1992 to March 1993, the *Radio Society of Great Britain* conducted a survey concerning the requirement of Morse Code as part of the British licensing examinations, particularly canvassing opinions on a "Code-free" HF licence. The RSGB has published a detailed, three-page report in its December 1993 issue of the society journal, *Radio Communication*. It makes fascinating reading.

By the closing date of March 8 last year, the survey had generated a total of 1413 replies from the UK and 86 from outside the country. The report, titled "To Key or Not to Key?", noted that the raw data, *"...shows that on this occasion there is a two-to-one majority in favour of retaining the Morse test as a means of access to the amateur bands below 30 MHz."* The report further noted that the majority of those wishing to retain the Morse test were Class A licensees (who have full priviliges, equating to our full licensees), while the majority of those wanting to do away with it were Class B licensees (who have full privileges, and up). In addition, *"...of the 86 letters received from overseas there is a much higher proportion in favour of retaining the Morse test,"* the report noted.

Of those replies expressing a view, 67.5% voted "no" to a code-free HF licence, while 32.5% voted "yes". More shortwave listeners replying to the survey voted "yes" to retaining the Morse test than voted "no".

In summing up, the report said, *"Gone are the days when a knowledge of Morse code was considered essential for communication between radio amateurs.*

"However, CW has been used, even in recent years, by other Services to communicate with amateurs and it is used, for example, to identify marine and aviation beacons.

"For a long time, it has been accepted that the Morse test does provide a limiting effect on the number of radio amateurs using the finite resource of the HF amateur bands."

Further, the report concluded that Morse code proficiency demonstrates a practical skill, *"...which is certainly relevant to amateur radio, but acquiring this skill will put some at a disadvantage.*

"However, few would dispute the fact that practical skills are an important facet of amateur radio."

Noting that relevant knowledge and practical skills are required, the report said, *"There are some useful arguments both for and against a Code Free Licence.*

"It is primarily up to the amateur community World-wide, and its representatives, to determine what qualifications are necessary and what standards need to be met to gain different types of transmitting licence."

The RSGB pointed out that the views expressed in the report do not represent RSGB policy. A ten-point table of "perceived benefits of Morse Code" was included with the report in *Radio Communication* magazine and cited the mode's narrow bandwidth advantages; its ideal nature for low power communications; advantages for beginners in simple, low cost equipment; the use of Morse in developing nations; lack of language difficulties and its advantage as the lowest common denominator for emergency communications.

South African Call Book

The Federal Office recently received a copy of the *South African Call Book* from the *South African Amateur Radio League* (SARL), published last August.

The 121-page, small-format (paperback size) book includes the usual callsign-name-address index as well as a name-to-callsign index. Cover price is R50.00, from the SARL.

WIA Accredited Examiners

(Listed in Postcode order)

Below is a list of examiners accredited by WIA Exam Service to conduct radio examinations using WIA Exam Service examination materials.

The list is published in postcode order to assist candidates to determine the examiner closest to their location. This list was up-to-date as at 13 January 1994, but more applications to become an accredited examiner are still being received.

Accredited examiners will not only be able to provide advice and assistance in relation to examinations, but also about "how to become a radio amateur", to all interested enquiries in their locality. The SMA and WIA Exam Service direct all such enquiries to accredited examiners in the area in which the enquirer lives.

Examiner	Group/Club	Address		Telephone
Terry Hine VK8TA	Darwin Amateur Radio Club Inc	PO Box 753, Darwin,	0801.	Tel 089 81 5516
Jim Jones VK5JF	Darwin Amateur Radio Club Inc	GPO Box 3583, Darwin,	0801.	Tel
Barrie Burns VK8DI	Darwin Amateur Radio Club Inc	1 Kerin Pl, Rapid Creek,	0810.	Tel 089 85 1068 (AH)
Spud Murphy VK8ZWM	Darwin Amateur Radio Club Inc	139 Lee Pt Rd, Wagaman,	0810.	Tel 089 46 5887 (BH)
Trevor Connell VK8CO	Darwin Amateur Radio Club Inc	PO Box 40441, Casuarina,	0811.	Tel 089 45 3373 (AH)
Ken Glasson VK8KG	Darwin Amateur Radio Club Inc	PO Box 42908, Casuarina,	0811.	Tel 089 45 3653 (AH)
Jeff Farmer VK8GF	Alice Springs ARC	PO Box 2953, Alice Springs,	0871.	Tel 089 52 2388 (BH)
Graham Heller VK8GR	Alice Springs ARC	PO Box 2953, Alice Springs,	0871.	Tel 089 52 4536
Terry Murphy VK8TM	Alice Springs ARC	PO Box 2953, Alice Springs,	0871.	Tel 089 52 5249
Grant Hinchcliffe VK2GIX	WARS Examinations	72 Vine St, Chippendale,	2008.	Tel 02 319 1913 (AH)
Eric Van De Weyer VK2KUR	WARS Examinations	PO Box 131, Watsons Bay,	2030.	Tel 02 318 6138 (BH)
Rick Cummins VK2QU	WARS Examinations	1493 Anzac Pde, Little Bay,	2036.	Tel 02 661 3816 (AH)
David Bloodworth VK2KQV	Hornsby Amateur Radio Club	24 Wambool St, Turramurra,	2074.	Tel 02 44 4080 (AH)
Graham Sommer VK2DWL	Hornsby Amateur Radio Club	PO Box 362, Hornsby,	2077.	Tel 02 875 2273 (AH)
Tony Williams VK2DJW	Hornsby Amateur Radio Club	PO Box 362, Hornsby,	2077.	Tel 02 489 3312 (AH)
Marque Crozman VK2ZLZ	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100.	Tel 02 450 2757 (AH)
Vic Joyce VK2EVJ	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100.	Tel 02 971 9537
Richard Murnane VK2SKY	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100.	Tel 02 971 4431 (AH)
Gordon Vick VK2JGV	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100.	Tel 02 913 3874 (AH)
Wally Jones VK2GTO		26 Donald St, Carlingford,	2118.	Tel 02 871 5190 (AH)
Patricia Parniczky VK2SUS		28 Hill Rd, West Pennant Hills,	2120.	Tel 02 873 1588 (AH)
Barry Gammage VK2GAM	WIA NSW Division	PO Box 1066, Parramatta,	2124.	Tel 02 727 7338
Cec Purvis L20997	WIA NSW Division	PO Box 1066, Parramatta,	2124.	Tel 02 649 9234
Terry Ryeland VK2UX	WIA NSW Division	PO Box 1066, Parramatta,	2124.	Tel 02 689 2417 (BH)
Barry Goldsmith VK2GQD	WIA NSW Division	PO Box 220, Homebush,	2140.	Tel 02 763 4111 (BH)
Garry Carter VK2TLA	WIA NSW Division	91 Sixth Ave, Berala,	2141.	Tel 02 644 7448 (AH)
Jim Goodger VK2JO		2 Fullam Rd, Blacktown,	2148.	Tel 02 622 6268
Jim Walker VK2XJW	WIA NSW Division	PO Box 2391, Nth Parramatta,	2151.	Tel 02 683 1112 (AH)
James Rodgers VK2DXM	ROADS	119 Showground Rd, Castle Hill,	2154.	Tel 02 680 1404 (BH)
Bob Girdo VK2RG		13 Iris St, Sefton,	2162.	Tel 02 743 7555 (AH)
Miles Burkitt VK2GOJ	Miles Communications P/L	1 Conrad St, Wetherill Park,	2164.	Tel 02 727 7338 (AH)
Hoss Bernhard VK2ICE	Fishers Ghost ARC	PO Box 34, Catherine Field,	2171.	Tel 046 28 3839 (AH)
Trevor Smith VK2TBK	Bankstown Amateur Radio Club	PO Box 251, Greenacre,	2190.	Tel 02 743 8417 (BH)
Wayne Brack VK2WDL	Bankstown Amateur Radio Club	54 Hillard St, Wiley Park,	2195.	Tel 02 743 8417 (BH)
Stephen Porter VK2BU		43 West Botany St, Arncliffe,	2205.	Tel 02 567 7590 (AH)
Stewart McCarthy VK2MX	St George ARS Inc	PO Box 530, Engadine,	2233.	Tel 02 520 8662 (AH)
Barry McNeil VK2FP	Sydney Amateur Television Gp	3 Bella Vista St, Heathcote,	2233.	Tel 02 520 2867 (BH)
Paul Smith VK2ZSA	St George ARS Inc	PO Box 530, Engadine,	2233.	Tel 02 520 7323 (AH)
Tom Thornton VK2CJT	St George ARS Inc	PO Box 530, Engadine,	2233.	Tel 02 520 5843
Ean Young VK2FSO	St George ARS Inc	PO Box 530, Engadine,	2233.	Tel 02 580 (AH)
Leon Brett VK2BLV	Central Coast ARC Inc	87 Albany St, East Gosford,	2250.	Tel 043 24 169
Bruce Holland VK2ZAD	Central Coast ARC Inc	12 Greenoaks Rd, Narara,	2250.	Tel 043 28 3148 (AH)
Len McNab VK2ABD	Central Coast ARC Inc	1 Shortland St, Gosford,	2250.	Tel 043 25 2860 (AH)
Bill Scovell VK2FKE	Central Coast ARC Inc	13 Tulani Ave, Daleys Point,	2257.	Tel 043 43 2339
Greg Jackson VK2GWJ		26 Harding Ave, Lake Munmorah,	2259.	Tel 043 58 8479 (AH)
Peter King VK2GPK	Southlakes Computers	6 Macnamir Close, Morisset,	2264.	Tel 049 73 3688 (AH)
Jim Wing VK2MSB		10 Victory Street, Cooranbong,	2265.	Tel 049 77 1507 (AH)
Peter Browne VK2GFE		PO Box 77, Warners Bay,	2282.	Tel 049 58 2832 (AH)
Maurice Jones VK2CD		PO Box 77, Warners Bay,	2282.	Tel 049 49 8786
Fred Lawler VK2SI	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282.	Tel 049 64 8018 (BH)
Paul Lorentzen VK2ATR	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282.	Tel 049 59 1788 (BH)
Greg Smith VK2GJS	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282.	Tel 049 41 3468 (BH)
Dave Myers VK2DFL	Wicen (NSW) Inc	61 Fern St, Arcadia Vale,	2283.	Tel 049 75 1136
Frederick Eade VK2AEE	Frederick William Eade	276 Park Ave, Kotara,	2289.	Tel 049 57 5131
Geoff McGrorey-Clark VK2JUG	Newcastle/District Packet RG	5 Monmouth St, Stockton,	2295.	Tel 018 66 7162 (BH)
George Hombsch VK2FCC	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340.	Tel 067 65 9351 (BH)

Examiner	Group/Club	Address		Telephone
Neville Pratt VK2FNP	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340.	Tel 067 65 4099
Allan Walker VK2ZJW	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340.	Tel 067 64 1878
Shane Rae VK2XRR		73 Cowper St, Wee Waa,	2388.	Tel 067 95 3075 (AH)
Brent Paull VK2ZOO		18 Boundary St, Narrabri,	2390.	Tel 067 92 3386 (AH)
Kevin Dockrill VK2GVE		12 Warrina Cres, Moree,	2400.	Tel 067 52 4699 (AH)
Trent Sampson VK2KTS		PO Box 1440, Moree,	2400.	Tel 067 52 1523
Brian Steel		309 Chester St, Moree,	2400.	Tel 067 52 1472
Dick Andrew VK2KRA	Taree Amateur Radio Club	RMB 110 Old Lansdowne Rd, Cundletown,	2430.	Tel 065 53 9888
Karl Bilger VK2DYX	Taree Amateur Radio Club	Lot 187 Allumba Cl, Taree,	2430.	Tel 065 51 2024 (AH)
Roy Brewer VK2VRB	Taree Amateur Radio Club	36 George St, Cundletown,	2430.	Tel 065 53 9786
Dick Zimic VK2BOT	Taree Amateur Radio Club	RMB 100 Old Lansdowne Rd, Cundletown,	2430.	Tel 065 53 9506
Keith Hanlon	Oxley Region ARC	PO Box 712, Port Macquarie,	2444.	Tel
Larry Lindsay VK2CLL	Oxley Region ARC	PO Box 712, Port Macquarie,	2444.	Tel 065 87 1155 (AH)
Bill Stofmeel VK2WST	Oxley Region ARC	PO Box 712, Port Macquarie,	2444.	Tel 065 85 3971
Trevor Thatcher VK2TT	Oxley Region ARC	PO Box 712, Port Macquarie,	2444.	Tel 065 85 2278
Bob Colsell VK2AWA	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450.	Tel 066 52 6135
Peter McAdam VK2EVB	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450.	Tel 066 52 7160
Hans Schumacher VK2DGV	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450.	Tel 066 51 2020 (AH)
John Williams VK2BUI	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450.	Tel 066 53 8313
Gerry Cresswell VK2IGC	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480.	Tel 066 63 1410 (AH)
Ken Hore VK2HE	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480.	Tel 066 21 8242 (BH)
Leith Martin VK2EA	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480.	Tel 066 24 2550 (AH)
Peter Richens VK2FSD	Summerland Amateur Radio Club	PO Box 91, Lismore Heights,	2480.	Tel 066 24 3211 (BH)
John Toland VK2XKX	Summerland Amateur Radio Club	101 College St, Lismore,	2480.	Tel 066 21 2933 (AH)
Rick Virtue VK2EJV	Summerland Amateur Radio Club	90-92 James St, Dunoon,	2480.	Tel 066 89 5137 (BH)
James Glenn VK2AIQ		78/122 Dry Dock Rd, Tweed Heads South,	2486.	Tel 075 24 9772
Errol Chittick VK2EGC	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488.	Tel 066 72 3237 (AH)
Phil Evans VK2KEV	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488.	Tel 066 76 1671 (AH)
LLoyd Martin VK2BYU	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488.	Tel
Graham Denney VK2GID	Illawarra ARS Inc	2/2A Macquarie St, Wollongong,	2500.	Tel 042 29 4170
Jim Hayes VK2EJH		1 Kathleen Cres, Woonona,	2517.	Tel 042 84 9317 (AH)
Mike Keech VK2DFK		54 Park Rd, Woonona,	2517.	Tel 042 83 2438
Barry Sullivan VK2BZ		20 Narelle Cres, Woonona,	2517.	Tel 042 85 2223 (AH)
Ken Goodhew VK2TKE		3 Hendricks Pde, Mt Warrigal,	2528.	Tel 042 97 3037 (AH)
Darrel Nelson VK2USA	Illawarra ARS Inc	PO Box 341, Dapto,	2530.	Tel 042 61 8636
Rolly Brown VK2GFO	Mid South Coast ARC Inc	8 Cheddar St, Moruya,	2537.	Tel 044 74 3361
Derek Holyoake VK2DRK	Mid South Coast ARC Inc	166 Hector McWilliam Dve, Tuross Head,	2537.	Tel 044 73 8596
Frank Hill VK2HQ	Mid South Coast ARC Inc	PO Box 113, Milton,	2538.	Tel 044 55 1077
Stan Bourke VK2EL	Mid South Coast ARC Inc	49 Parson St, Ulladulla,	2539.	Tel 044 55 5825
Dave Parry VK2CDP	Mid South Coast ARC Inc	49 Garside Rd, Mollymook,	2539.	Tel 044 55 1311
Jennifer Cox		41 King George St, Callala Beach,	2540.	Tel 044 46 5728 (AH)
Peter Madden VK2XXS		30 Catherine St, Myola,	2540.	Tel 044 46 5196
David Blunn VK2DDJ	Shoalhaven Amateur Radio Club	PO Box 230, Nowra,	2541.	Tel 044 64 1056
John Bogdanski VK2FEX	Shoalhaven Amateur Radio Club	PO Box 230, Nowra,	2541.	Tel 044 21 0670
James O'Brien VK2BHU	Far South Coast ARC	PO Box 46, Bega,	2550.	Tel 064 94 1286
David Plumb VK2DRP	Far South Coast ARC	PO Box 686, Bega,	2550.	Tel 064 92 2220
Ray Price VK2AWQ	Far South Coast ARC	26 Bay St, Tathra,	2550.	Tel 064 94 1347
Robert Demkiw VK2ENU		18 Ettalong Place, Woodbine,	2560.	Tel 046 26 4776 (AH)
David Medcalf VK2GDM	Fishers Ghost ARC	9 Buffalo Way, Campbelltown,	2560.	Tel 046 27 1025
Les Simmons VK2TJ	Fishers Ghost ARC	8 Raymond Ave, Campbelltown,	2560.	Tel 046 28 3839
Michael Turner VK2WMT	Bankstown Amateur Radio Club	PO Box 375, Ingleburn,	2565.	Tel 02 334 0023 (BH)
Noel Flynn VK2WHY		3226 Hume Hwy, Bargo,	2574.	Tel 046 84 2134
Dennis Peake VK2ADW		29 Wattle St, Colo Vale,	2575.	Tel 048 89 4518
Ian Jeffrey VK2AIJ	Goulburn Amateur Radio Soc	144 Kinghorne St, Goulburn,	2580.	Tel 048 21 6806 (AH)
Alex Thuma VK2ATY	Goulburn Amateur Radio Soc	26 William St, Goulburn,	2580.	Tel 048 21 9256 (AH)
Mike Morrissey VK1RI		32 Lonsdale St, Braddon,	2601.	Tel 06 248 9600 (BH)
Neil Pickford VK1KNP	WIA ACT Division	GPO Box 600, Canberra,	2601.	Tel 06 274 8422 (BH)
Mal Cooper VK1MC		PO Box 652, Jamison,	2604.	Tel 06 226 3440 (AH)
Nevil Eyre VK1NE	Tidbinbilla ARC	PO Box 4350, Kingston,	2604.	Tel 06 201 7800 (BH)
Bob Quick VK1ZQR	Tidbinbilla ARC	PO Box 4350, Kingston,	2604.	Tel 06 201 7800 (BH)
Len Ricardo VK1ALR	Tidbinbilla ARC	PO Box 4350, Kingston,	2604.	Tel 06 201 7867 (BH)
Christopher Davis VK1DO	WIA ACT Division	123 Hawkesbury Cres, Farrer,	2607.	Tel 018 62 5027
Rob Apathy VK1KRA	WIA ACT Division	5 Wrixon St, Latham,	2615.	Tel 06 254 2982
Barry Busch'l VK2GDV	Twin Cities R & E Club Inc	355 Wilson St, Albury,	2640.	Tel
Alan James VK2ACN	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640.	Tel 060 25 1117 (AH)
Greg Sargeant VK2EXA	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640.	Tel 060 21 5438 (AH)
Graeme Scott VK2KE	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640.	Tel 060 21 3655 (BH)
David Ashley VK2JDA	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650.	Tel
Harley Davison VK2AHD	Wagga Amateur Radio Club Inc	18 Warrawong St, Wagga,	2650.	Tel 069 21 1004 (AH)
John Eyles VK2BXD	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650.	Tel 069 22 2363 (BH)
Mike McDonnell VK2DAI	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650.	Tel
Peter Watson VK2APW	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650.	Tel

Examiner	Group/Club	Address		Telephone
Leon Boneham VK2DLN	Griffith ARC Inc	PO Box 1804, Griffith,	2680.	Tel 069 62 4534 (BH)
Graeme Watkins VK2DGW	Griffith ARC Inc	PO Box 1016, Griffith,	2680.	Tel 069 62 4577 (BH)
Don Smith VK2BDU		34 Fowler St, Deniliquin,	2710.	Tel 058 81 1267
John Goodall VK2ESP		RMB 850, Moama,	2731.	Tel 058 89 5121
Eric Fossey VK2EFY	Blue Mountains ARC	45 Gascoigne St, Penrith,	2750.	Tel 047 31 5885
Garry Cottle VK2AGC		SGTS Mess, RAAF Base, Richmond,	2755.	Tel 045 70 2192 (BH)
Pixie Chapple VK2KPC	Blue Mountains ARC	231 Shepherd St, St Marys,	2760.	Tel 02 623 5663 (AH)
Brett Hazell VK2CBH	Chifley Amateur Radio Club	PO Box 280, Mt Druitt,	2770.	Tel 02 671 2035 (AH)
Leon McHugh VK2FLI	Chifley Amateur Radio Club	PO Box 280, Mt Druitt,	2770.	Tel 02 625 9646
Ralph Simmons VK2GRS	Chifley Amateur Radio Club	PO Box 280, Mt Druitt,	2770.	Tel 02 671 4756
Perce Garbutt VK2GAI		10 Tygh St, Lapstone,	2773.	Tel 047 39 3866
David Barry VK2CFB	Blue Mountains ARC	6 Murray Ave, Springwood,	2777.	Tel 047 51 5775
Julie Kentwell VK2XBR	Sydney Amateur Television Gp	34 Raymond Rd, Springwood,	2777.	Tel 047 51 1219
Alan Whitmore VK2YYJ		32 Greens Pde, Valley Heights,	2777.	Tel 02 625 1388 (BH)
Adrian Clout VK2BFN		137 Lower Valley Rd, Hazelbrook,	2779.	Tel 047 58 6797
John Dudley VK2GXZ		PO Box 52, Hazelbrook,	2779.	Tel 047 58 6131 (BH)
Peter Van Gemert VK2ALL	Bathurst Amateur Radio Club	291 Durham St, Bathurst,	2795.	Tel 063 31 2464
Neville Wilde VK2DR	Bathurst Amateur Radio Club	22 White St, Bathurst,	2795.	Tel 063 31 5809 (AH)
Bruce Carroll VK2DEQ	Orange Amateur Radio Exams	PO Box 128, Orange,	2800.	Tel 063 62 8703
Peter Carter VK2ETK	Orange Amateur Radio Exams	7 Ophir Rd, Orange,	2800.	Tel 063 61 3439 (AH)
Carl Palmer VK2BSD		PO Box 392, Wellington,	2820.	Tel (AH)
Ken Bird VK2GDK	Orana Amateur Radio Club	213 Alagalah St, Narromine,	2821.	Tel 068 89 1308
Frank Wall VK2CWL	Orana Amateur Radio Club	"Westbrook", Narromine,	2821.	Tel 068 89 0535
James Armytage VK2CJA	Orana Amateur Radio Club	"Kelburn", Gilgandra,	2827.	Tel 068 48 1062
Bruce Chung VK2WWW	Orana Amateur Radio Club	26 Myrtle St, Gilgandra,	2827.	Tel 068 47 2522
John Hams VK2JH	Orana Amateur Radio Club	Lot 28 Bencubbin Estate, Dubbo MS7,	2830.	Tel 068 87 8241 (AH)
David Walters VK2AYO	Orana Amateur Radio Club	"Carramar" Burraway Rd, Dubbo MS 4,	2830.	Tel 068 88 5265
Walter Field VK2NNF	Parkes & District ARC Inc	C/- 4 William St, Parkes,	2870.	Tel 068 62 1776
Peter Hughes VK2MLG	Parkes & District ARC Inc	39 Orange St, Parkes,	2870.	Tel 068 62 4217 (AH)
Dave Kent VK2BJI	Parkes & District ARC Inc	PO Box 564, Parkes,	2870.	Tel 068 62 2154
Lindsay Richmond VK1NDM	Tidbinbilla Tracking Station	21 Buckley Cct, Kambah,	2902.	Tel 06 231 4182 (AH)
Jan Burrell VK1BR	WIA ACT Division	20 Currey St, Gowrie,	2904.	Tel
Ross Peters VK1DZ	Tidbinbilla Tracking Station	14 Mehaffey Cres, Theodore,	2905.	Tel 06 292 5477 (AH)
John Beverin VK3CMO	RMIT School of Electrotech	GPO Box 2476V, Melbourne,	3001.	Tel 03 660 4455 (BH)
Graham Cottew VK3DPC	ARA Exam Service	GPO Box 628E, Melbourne,	3001.	Tel 03 601 4203 (BH)
Neil Duncan VK3OK	ARA Exam Service	GPO Box 628E, Melbourne,	3001.	Tel 03 601 4203
Chris Edmondson VK3YID	ARA Exam Service	GPO Box 628E, Melbourne,	3001.	Tel 03 601 4203 (BH)
Graham Judge VK3YGJ	ARA Exam Service	GPO Box 628E, Melbourne,	3001.	Tel 03 601 4203 (BH)
Ralph Parkhurst VK3ZIP	ARA Exam Service	GPO Box 628E, Melbourne,	3001.	Tel 03 601 4203 (BH)
Rob Whitmore VK3ESE	RMIT School of Electrotech	GPO Box 2476V, Melbourne,	3001.	Tel 03 660 4479 (BH)
Alan Foulstone VK3ECZ	RAAF Williams ARC	PO Box 161, Laverton,	3028.	Tel 03 368 3600
Bruce Kendall VK3WL	RAAF Williams ARC	8 Walwa Place, Werribee,	3030.	Tel 03 741 7654 (AH)
Jumbo Kennedy VK3BIG	RAAF Williams ARC	26 Tarneit Rd, Werribee,	3030.	Tel 03 741 2856
Dixie Lee VK7HP	RAAF Williams ARC	5/24 Salisbury St, Werribee,	3030.	Tel 03 742 3786
Joe Aprile VK3GFA		19 Scotia St, Moonee Ponds,	3039.	Tel 03 370 7697
Brian Purcell VK3BQP		27 Kathleen St, Pascoe Vale South,	3044.	Tel 03 386 7750
Howard Rider VK3ZJY		232 Cumberland Road, Pascoe Vale,	3044.	Tel 03 306 8484
John Wright VK3AJL	J Wright & Associates	72 Ramsden St, Clifton Hill,	3068.	Tel
Les Cardilini VK3BLC	RMIT School of Electrotech	PO Box 418, Craigieburn,	3064.	Tel 03 305 6297
Kevin Gilbert	Xavier College Radio Club	59 Hawthorn Rd, Northcote,	3070.	Tel 03 854 5411 (BH)
Pino Glessi VK3WU		184 Clarke St, Northcote,	3070.	Tel 03 489 0817 (AH)
Bernie Neumann VK3AXL	Xavier College Radio Club	59 Hawthorn Rd, Northcote,	3070.	Tel 03 489 9732 (AH)
Jim Baxter VK3DBQ	NERG Exams	1 Pamela Crt, Bundoora,	3083.	Tel 03 467 1253 (AH)
Graham Gall VK3ZS		76 Greenwood Dve, Bundoora,	3083.	Tel 03 467 2697
Gary Greer VK3KBL	NERG Exams	54 Corowa Cres, Greensborough,	3088.	Tel 03 434 3687
Chris McLaughlin VK3CHR		24 Collendina Cres, Greensborough,	3088.	Tel 03 322 6104 (BH)
Ewen Templeton VK3BMV	NERG Exams	45 Cairns St, Greensborough,	3088.	Tel 03 434 6071 (AH)
Greg Williams VK3VT	NERG Exams	1 Noorabil Crt, Greensborough,	3088.	Tel 03 634 5532 (BH)
Harry Lodder VK3AXJ	Camberwell Grammar Radio Club	PO Box 151, Balwyn,	3103.	Tel 03 836 6266 (BH)
Des Bird VK3EDB	Electrotechnology RMIT	8 Queen St, Surrey Hills,	3127.	Tel 03 836 1837 (AH)
Philip Adams VK3JNI	Scout R & E Service Unit	PO Box 311, Box Hill,	3128.	Tel 03 438 3013 (AH)
Len Atyeo VK3DXM	Scout R & E Service Unit	PO Box 311, Box Hill,	3128.	Tel 03 848 3580
Craig Cook VK3CMC	RMIT School of Electrotech	33 Haig St, Box Hill South,	3128.	Tel 03 890 2117 (AH)
Peter Fraser VK3ZPF	Scout R & E Service Unit	PO Box 311, Box Hill,	3128.	Tel 03 895 9617 (AH)
Rob Carmichael VK3DTR		PO Box 200, Forest Hill,	3131.	Tel
Jim Linton VK3PC		PO Box 200, Forest Hill,	3131.	Tel
Geoff Atkinson VK3YFA	EMDRC	PO Box 87, Mitcham,	3132.	Tel 03 791 7988 (BH)
Jack Bramham VK3WWW	EMDRC	PO Box 87, Mitcham,	3132.	Tel 03 873 2459 (AH)
Joe Magee VK3BKI	EMDRC	PO Box 87, Mitcham,	3132.	Tel 03 729 8579 (AH)
Dave Neville VK3UC	EMDRC	PO Box 87, Mitcham,	3132.	Tel 03 802 7492 (AH)
David Nisbet VK3XDA	EMDRC	PO Box 87, Mitcham,	3132.	Tel 03 420 2035 (BH)
Len Vermeulen VK3COD	EMDRC	PO Box 87, Mitcham,	3132.	Tel 03 808 5350 (AH)

Examiner	Group/Club	Address		Telephone
John Bedwell VK3EHZ	EMDRC	49 Winyard Dve, Mooroolbark,	3138.	Tel 03 726 7700
Craig McMillan VK3CRA	VK3CRA Amateur Exams	5 Sunview Crt, Dingley,	3172.	Tel 03 551 5635
Ross Northmore VK3TMP		35 Oak Ave, Doveton,	3177.	Tel 018 99 1982 (BH)
Frank Robinson VK3DDK		PO Box 173, Prahran,	3181.	Tel
Keith Forbes VK3ENR	Moorabbin College of TAFE	Private Bag 19, Moorabbin,	3189.	Tel 03 556 9600 (BH)
Roderick Wall VK3BKO	Moorabbin College of TAFE	Private Bag 19, Moorabbin,	3189.	Tel 03 556 9600 (BH)
Brian Fairless VK3ES	Moorabbin & District RC Inc	PO Box 58, Highett,	3190.	Tel 03 592 7536
Jerry Viscaal VK3MQ	Moorabbin & District RC Inc	PO Box 58, Highett,	3190.	Tel 03 704 6355 (AH)
Mark Diggins VK3JMD		1 Pembroke Cres, Cheltenham,	3192.	Tel 03 583 7692 (AH)
Brett Leslie VK3JHP		35 Evesham Rd, Cheltenham,	3192.	Tel 03 584 4230 (AH)
Shirley Johnson VK3NKN	FAMPARC	54 Scotch Pde, Bonbeach,	3196.	Tel 03 772 8457 (AH)
Gordon Buchanan VK3BGB	FAMPARC	PO Box 38, Frankston,	3199.	Tel 03 789 7710
Jessie Buchanan VK3VAN	FAMPARC	4 Milford Cres, Karingal,	3199.	Tel 03 789 7710
Gordon Dawe VK3GAD	FAMPARC	C/- 4 Milford Cres, Frankston,	3199.	Tel 03 783 7717
Audrey Gibson VK3FI		94 Kars St, Frankston,	3199.	Tel 03 783 8714
Len Gibson VK3SI		94 Kars St, Frankston,	3199.	Tel 03 783 8714
Peter Johnson VK3NPJ	FAMPARC	PO Box 38, Frankston,	3199.	Tel 03 772 8457 (AH)
Graham Wallington VK3BGL	FAMPARC	13 Milford Cres, Frankston,	3199.	Tel 03 789 2972 (AH)
Ian Stowe VK3GA	FAMPARC	20 Norfolk Cres, Frankston North,	3200.	Tel 03 785 2976 (AH)
Barry Watts VK3BRW	Only Tomorrow	36 Mountain St, South Melbourne,	3205.	Tel
Valerie Watts VK3CVW	Only Tomorow	36 Mountain St, South Melbourne,	3205.	Tel
Chas Gnaccarini VK3BRZ	Geelong Amateur Radio Club	66 Smeaton Close, Lara,	3212.	Tel 052 82 3167 (AH)
John Collins VK3TKH	Geelong Amateur Radio Club	22 Elinbank Dve, Grovedale,	3216.	Tel 052 43 0075
Keith Vriens VK3AFI	Geelong Amateur Radio Club	204 Myers St, Geelong,	3220.	Tel 052 21 3658
Lee de Vries VK3PK	Geelong Amateur Radio Club	215 Swan Bay Rd, Wallington,	3221.	Tel 052 50 1105 (AH)
Tom Evans VK3EGM	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254.	Tel 052 33 1412
Maggie Iaquinto VK3CFI	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254.	Tel 052 32 1118 (AH)
Rob Spalding VK3ERS	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254.	Tel 052 33 1412
Bill Bell VK3WK	Warrnambool R & E Club	PO Box 724, Warrnambool,	3280.	Tel 055 65 9348 (BH)
Bill Dennis VK3XE	Warrnambool R & E Club	5 Karana Dve, Warrnambool,	3280.	Tel 055 62 9132
Ian Durston VK3VID	Warrnambool R & E Club	8 Enterprise Crt, Warrnambool,	3280.	Tel 055 62 8684
Joe Morgan VK3CDX	Warrnambool R & E Club	44 Merrivale Dve, Warrnambool,	3280.	Tel 055 62 7140
Mona Swinton VK3BRE	Warrnambool R & E Club	PO Box 724, Warrnambool,	3280.	Tel 055 62 6016
Trevor Dyson VK3DTV	Warrnambool R & E Club	RMB 5280, Yambuk,	3285.	Tel 055 68 4228 (AH)
Ian Mason VK3DNQ	Warrnambool R & E Club	PO Box 10, Yambuk,	3285.	Tel 055 68 4214
Harold Benson VK3VSX	Hamilton & District RC	PO Box 188, Hamilton,	3300.	Tel 055 23 4773
Steve Curtis VK3CAX	Hamilton & District RC	PO Box 188, Hamilton,	3300.	Tel 055 72 1355 (BH)
Ray Downes VK3ERD	Hamilton & District RC	PO Box 188, Hamilton,	3300.	Tel 055 78 6352
Keith Heemskerk VK3AIH	Hamilton & District RC	PO Box 188, Hamilton,	3300.	Tel 055 23 1977 (BH)
Reg Carter VK3CAZ	BARG	PO Box 216E, Ballarat East,	3350.	Tel 053 41 7585 (AH)
Gordon Cornell VK3FGC	BARG	PO Box 216E, Ballarat East,	3350.	Tel 053 39 2427 (AH)
Tom George VK3DMK	BARG	PO Box 216E, Ballarat East,	3350.	Tel 053 32 7234 (BH)
Ian McDonald VK3AXH	BARG	PO Box 216E, Ballarat East,	3350.	Tel 053 31 1317 (BH)
Charlie Stewart VK3DCS	BARG	PO Box 216E, Ballarat East,	3350.	Tel 053 31 7425
Ian Wyndham VK3EF	BARG	317 Eureka St, Ballarat,	3350.	Tel 053 32 7234
Geoff Smith VK3ADB	BARG	PO Box 1249, MC Ballarat,	3354.	Tel 053 33 2112 (AH)
Bob Terrill VK3BNC	BARG	7 Locksley St, Wendouree,	3355.	Tel 053 39 5317
Eric Froude VK3FRO	BARG	Post Office, Linton,	3360.	Tel 053 44 7448
Dave Ward VK3PUG	Horsham Amateur Radio Club	PO Box 720, Horsham,	3400.	Tel 053 82 2852 (AH)
Andy Squires VK3DTO	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401.	Tel 053 82 1439 (BH)
David Timms VK3YLV	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401.	Tel 053 82 5399 (BH)
Mark Weaver VK3KZZ	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401.	Tel 053 81 1711 (BH)
Leon Reichelt VK3KIT		PO Box 654, Horsham,	3402.	Tel 053 84 8219 (AH)
Wally Maxwell VK3MJW	Sunbury ARC Inc	20 Kintore Close, Sunbury,	3429.	Tel 03 744 6020
Ian Morris VK3DVO	Sunbury ARC Inc	PO Box 915, Sunbury,	3429.	Tel 03 744 4326 (AH)
Craig Norris VK3TCN	Sunbury ARC Inc	PO Box 915, Sunbury,	3429.	Tel 054 28 4154 (AH)
John Nunan VK3IC	Sunbury ARC Inc	PO Box 915, Sunbury,	3429.	Tel 03 744 2506 (AH)
Judy Atkins VK3AGC		"Taralea Park", Old Drummond Rd Taradale,	3447.	Tel 054 23 2409
Ron Atkins VK3BYM		Old Drummond Rd, Taradale,	3447.	Tel 054 23 2409
George Loft VK3AGM	Midland ARC Inc	28 Lawrence Street, Castlemaine,	3450.	Tel 054 72 3476 (AH)
Denis Charlesworth VK3DWC		Majorca Rd, Carisbrook,	3464.	Tel 054 64 2309 (AH)
Peter Rafferty VK3ITI		49 Majorca Rd, Maryborough,	3465.	Tel 054 60 4387 (AH)
Allan Greening VK3PA		PO Box 67, Dunolly,	3472.	Tel 054 68 1088
Terry Bunting	Sunraysia Amateur Exams	PO Box 30, Mildura,	3502.	Tel 050 25 7202 (AH)
Maurie Milani VK3CWB	Sunraysia Amateur Exams	PO Box 30, Mildura,	3502.	Tel 050 22 2120 (AH)
Peter Milne VK3PM	Sunraysia Amateur Exams	PO Box 30, Mildura,	3502.	Tel 050 24 5814 (AH)
Watty Cameron VK3WMC	Midland ARC Inc	166 McKenzie Street West, Golden Square,	3555.	Tel 054 47 0560 (AH)
Colin Lelean VK3CWL	Midland ARC Inc	11 Mathrick Street, Eaglehawk,	3556.	Tel 054 46 9995 (AH)
Ray Taylor VK3FQ		Tandara Rd, Tandara,	3571.	Tel 054 36 8301
Rex James VK3OF	Swan Hill & District ARC	PO Box 682, Swan Hill,	3585.	Tel 050 33 1032
Daryl Manley VK3AMJ	Swan Hill & District ARC	PO Box 682, Swan Hill,	3585.	Tel 050 32 1427
Dave Duff VK3JRA	Shepparton & District ARC	6 Yarramundi Crt, Murchison,	3610.	Tel 058 26 2586 (AH)

Examiner	Group/Club	Address		Telephone
Wayne Collyer VK3XQA	Shepparton & District ARC	PO Box 692, Shepparton,	3630.	Tel
Roger Conway VK3ACC	Shepparton & District ARC	PO Box 1878, Shepparton,	3630.	Tel 058 23 1847 (AH)
Barrie Halliday VK3KBY	Shepparton & District ARC	37 Gourlay St, Shepparton,	3630.	Tel 058 21 5756
Peter O'Keefe VK3YF	Shepparton & District ARC	PO Box 654, Shepparton,	3630.	Tel 058 21 6070 (AH)
George Jackson	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690.	Tel 060 55 6517 (BH)
Reg Jones VK3GC	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690.	Tel 057 56 2230 (AH)
Chris Solly	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690.	Tel 060 55 6517 (BH)
Michael Greenall	Army College of TAFE	Radio Trades Latchford Bk, Milpo Bonegilla,	3693.	Tel 060 55 4340 (BH)
Ian McInnes VK2XXW	Army College of TAFE	Radio Trades Latchford Bk, Milpo Bonegilla,	3693.	Tel 060 55 4340 (BH)
Malcolm McRae VK3BXJ	Army College of TAFE	Radio Trade Wing, Latchford Milpo Bonegilla,	3693.	Tel 060 55 4340 (BH)
Peter O'Bryan VK3MU		PO Box 180, Yarrawonga,	3730.	Tel 057 44 2176 (AH)
Hilton Younger VK3AHY		10 Witt St, Yarrawonga,	3730.	Tel 057 44 3768
Derek Thurgood VK3DD	Healesville ARG Inc	PO Box 234, Yarra Glenn,	3775.	Tel 03 730 1557 (AH)
Phil Hingeley VK3IN	Healesville ARG Inc	27 Westmount Rd, Healesville,	3777.	Tel 059 62 2832
Graeme Tremellen VK3GPT	Healesville ARG Inc	PO Box 285, Healesville,	3777.	Tel 059 62 6098
Gavin Hobbs VK3TLN	Healesville ARG Inc	PO Box 105, Cockatoo,	3781.	Tel 059 68 8482
John Hill VK3WZ		6 Cumberland Way, Endeavour Hills,	3802.	Tel 03 700 5428
Graeme Brown VK3BXG	VK3 Eastern Zone Education	RMB 8375 Pryor Rd, Drouin,	3818.	Tel 056 23 1227 (BH)
Colin Dyason VK3PJ	VK3 Eastern Zone Education	66 Colquhoun Blvd, Warragul,	3820.	Tel 056 23 4655 (BH)
Bernard Henne VK3YTT	VK3 Eastern Zone Education	12 Ash St, Morwell,	3840.	Tel 051 34 4275 (AH)
Peter Freeman VK3KAI	VK3 Eastern Zone Education	PO Box 273, Churchill,	3842.	Tel 051 22 2550 (AH)
Henk Pillekers VK3CAQ	VK3 Eastern Zone Education	PO Box 65, Churchill,	3842.	Tel 051 22 1885 (AH)
Patrick Bond VK3GEE		PO Box 87, Rosedale,	3847.	Tel 051 99 2811
Kevin McGrath VK3EQM	WIA East Gippsland Zone	12 Government Rd, Paynesville,	3880.	Tel 051 56 6938
Bob Neal VK3ZAN	WIA East Gippsland Zone	76 Langford Pde, Paynesville,	3880.	Tel 051 56 7654
John Piovesan VK3GU	WIA East Gippsland Zone	15 Gilsenan St, Paynesville,	3880.	Tel 051 56 6110
Bob Dickinson VK3BLD		94 Dunlop St, Bittern,	3918.	Tel 059 83 9162
Steven Mathias VK3ZXR		3/95 Lorimer St, Crib Point,	3919.	Tel 059 83 6197 (AH)
Frank Feldman VK3BC	Southern Peninsula Radio Club	30 Armstrong Rd, McCrae,	3938.	Tel 059 86 2031
Vic Vickery VK3DEA	Southern Peninsula Radio Club	11 Flamingo Rd, Rosebud West,	3940.	Tel 059 86 1327
Alan Robinson VK3SQ	Southern Peninsula Radio Club	16 Alathea Crt, Rye,	3941.	Tel 059 85 6213
Barry Wilton VK3XV		PO Box 260, Cranbourne,	3977.	Tel
Lindsay Allen VK3LFA	Community D/L Wonthaggi Inc	13 Epsom St, Wonthaggi,	3995.	Tel 056 72 2563
Colin Thomson VK3VBU	Community D/L Wonthaggi Inc	20 Fuller Rd, Wonthaggi,	3995.	Tel 056 72 3144
Ted Trinder VK3JMT	Community D/L Wonthaggi Inc	1 Campbell St, Wonthaggi,	3995.	Tel 056 72 2307
Ted Raven VK4KRR	QRV Exam Service	22 David St, Toombul,	4012.	Tel 07 266 6197
Bob Godfrey VK4BOB	Department of Education QLD	20 Buckra St, Bracken Ridge,	4017.	Tel 07 269 5380 (AH)
Rodger Bingham VK4HD	Redcliffe Radio Club	PO Box 20, Woody Point,	4019.	Tel 074 96 4553
Peter Breed VK4PB	Redcliffe Radio Club	PO Box 20, Woody Point,	4019.	Tel 07 284 1960
Nigel Marsh VK4EEE	Redcliffe Radio Club	PO Box 20, Woody Point,	4019.	Tel
John Presotto VK4WX	Redcliffe Radio Club	PO Box 20, Woody Point,	4019.	Tel 07 283 1329 (AH)
Laurie Pritchard VK4BLE	Redcliffe Radio Club	PO Box 20, Woody Point,	4019.	Tel 07 284 8859 (AH)
Mark Van Laecke VK4VG	Redcliffe Radio Club	PO Box 20, Woody Point,	4019.	Tel 074 95 5794
Bob Neville VK4ACL	QRV Exam Service	124 Roscommon Rd, Boondall,	4034.	Tel 07 265 3104
Ron Everingham VK4EV	Brisbane ARC	30 Hunter St, Everton Park,	4053.	Tel 07 355 4308 (AH)
Don Johnman VK4DS	Brisbane ARC	12 Jarrott St, Chelmer,	4068.	Tel 07 379 6341
Neil Faulkner VK4ANF		41 O'Briens Rd, Pullenvale,	4069.	Tel 07 202 7932
Garry Hawgood VK4KE	Radio Amateurs Group	9 Ararat St, Riverhills,	4074.	Tel 07 279 0278
Murray Kelly VK4AOK	WIAQ Examinations Service	29 Molonga Tce, Graceville,	4075.	Tel 07 379 3307
Steve Vaughan VK4YEK	Brisbane ARC	PO Box 300, Darra,	4076.	Tel 07 849 8156
George Nelson VK4WZ	Brisbane ARC	96 Ekibin Rd, Annerley,	4103.	Tel 07 848 2456
Greg O'Grady VK4TUX	Department of Education QLD	33 Koala Rd, Moorooka,	4105.	Tel 07 848 0081 (AH)
Brian Knowles VK4CBK		4 Glen St, Browns Plains,	4118.	Tel 07 809 2778 (AH)
Roy O'Malley VK4ZQ	WIAQ Examinations Service	Emtronics QLD P/L, 416 Logan Rd Stones Cnr,	4120.	Tel 07 394 2555 (BH)
Keith Griffin VK4IO	Bayside District ARS Inc	20 Kordick St, Carina,	4152.	Tel 07 398 6013 (AH)
Ian Campbell VK4TK	Bayside District ARS Inc	PO Box 411, Capalaba,	4157.	Tel 07 824 1518 (AH)
Cathie Cooper VK4FG	Bayside District ARS Inc	PO Box 411, Capalaba,	4157.	Tel 07 245 5432 (AH)
Roy Mahoney VK4BAY	Bayside District ARS Inc	PO Box 411, Capalaba,	4157.	Tel 07 396 1655
George Roberts VK4BSH	Bayside District ARS Inc	PO Box 411, Capalaba,	4157.	Tel 07 206 7298 (AH)
Dennis Waugh VK4ALL	Bayside District ARS Inc	PO Box 411, Capalaba,	4157.	Tel 07 209 9365 (AH)
Ian Perkins VK4YIP	WIAQ Examinations Service	46 Napier St, Birkdale,	4159.	Tel 07 207 3627 (AH)
Nic Chantler VK4DIT	Gold Coast ARS Inc	PO Box 6620, Gold Coast Mail Centre,	4217.	Tel 075 39 6609 (AH)
John Harvey VK4XJH	Gold Coast ARS Inc	PO Box 5159, Gold Coast Mail Centre,	4217.	Tel 075 32 0400 (BH)
Robert White VK4TRW	Gold Coast ARS Inc	5 McCubbin Crt, Burleigh Heads,	4220.	Tel 075 35 2222 (AH)
George Walters VK4VGW	Gold Coast ARS Inc	64 Bateke Rd, Mt Tamborine,	4272.	Tel 075 45 2148
Bob Linsket VK4ALI	Ipswich & District ARC	5 Cypress St, Loamside,	4305.	Tel 07 288 9321
Greg Walker VK4TDR	Ipswich & District ARC	48 Siemon St, One Mile,	4305.	Tel 07 281 1370 (AH)
Denis Bill VK4XDB	Ipswich & District ARC	43 Coal Rd, Chuwar,	4306.	Tel 07 281 8658
Peter Ormerod VK4CPW		PO Box 114, Amberley,	4306.	Tel (BH)
Mal Beck	Concordia College Toowoomba	154 Stephen St, Toowoomba,	4350.	Tel 076 36 1700 (BH)
Graham Weier VK4AGN		C/- 58 Water St, Toowoomba,	4350.	Tel 076 39 2219 (BH)
Cliff Jenkins VK4QJ		"Weer Heer" MS 1073, Crows Nest,	4355.	Tel 076 98 1223

Examiner	Group/Club	Address	Telephone
John Moulder VK4YX	Cunningham Radio Club	PO Box 323, Warwick, 4370.	Tel 076 61 3131 (BH)
Kerin Hunting VK4HL		32 Matthew St, Stanthorpe, 4380.	Tel 076 81 2083 (BH)
Graham Rayner VK4GDR	Cunningham Radio Club	PO Box 93, Glen Aplin, 4381.	Tel 076 83 4336 (AH)
Neil Holmes VK4NF	Dalby & District ARC	15 Bunya St, Dalby, 4405.	Tel 076 62 4950
Reg Kerslake VK4AQU	Dalby & District ARC	88 Patrick St, Dalby, 4405.	Tel 076 62 2193
Margaret Schwerin VK4OE	Dalby & District ARC	"Rosedale" MS 902, Dalby, 4405.	Tel 076 62 3934
David Jones VK4OF	WIAQ Examinations Service	18 Browning Crt, Strathpine, 4500.	Tel 07 205 1561
Bill McDermott VK4AZM	WIAQ Examinations Service	8 Panorama St, Bray Park, 4500.	Tel 07 260 1366 (BH)
Nev Mills VK4KOP	WIAQ Examinations Service	49 Viscount St, Bray Park, 4500.	Tel 07 205 4532 (AH)
Bill Yates VK4YWY	QRV Exam Service	29 Brittainy St, Petrie, 4502.	Tel 07 285 1462 (BH)
Brian Berry VK4BDB	WIAQ Examinations Service	42 Laver St, Morayfield, 4506.	Tel 074 98 5754 (AH)
Charlie Strong VK4YZ	Redcliffe Radio Club	St M's Old Toorbul Pt Rd, Caboolture, 4510.	Tel 074 95 1565
Ken Hanby VK4IS	Sunshine Coast ARC	17 Kig Hts 14 Queen St, Caloundra, 4551.	Tel 074 91 5532
Max Vincent VK4ZMV		PO Box 10, Golden Beach, 4551.	Tel 074 92 2710
Mike Mallett VK4CCA	Sunshine Coast ARC	4 Seaview Crt, Maroochydore, 4558.	Tel 074 79 1078
Ron Marschke VK4DRC	Sunshine Coast ARC	759-769 Diddillibah Rd, MS1536 Nambour, 4560.	Tel 074 48 4063
Jack Cornes VK4VAH	Gympie Amateur Radio Club Inc	43 Mellor St, Gympie, 4570.	Tel 074 82 2443
Ian Parkinson VK4KUP	Gympie Amateur Radio Club Inc	PO Box 845, Gympie, 4570.	Tel 074 82 9886 (AH)
Fran Walker VK4NSN	Gympie Amateur Radio Club Inc	86 Noosa Rd, Gympie, 4570.	Tel 074 82 5325
Roy Winchester VK4IRW	Gympie Amateur Radio Club Inc	Lot 4 Jeremy Rd, Gympie, 4570.	Tel 074 82 7823
Ron MacNamara VK4ESC	Sunshine Coast ARC	23 Callitris Cres, Marcus Beach, 4573.	Tel 074 48 1886
Bob Harper VK4KNH		4 Buckingham St, Kingaroy, 4610.	Tel
Geoff Hosking VK4ZGH		4 Buckingham St, Kingaroy, 4610.	Tel 071 62 5924
Ian Mowat VK4ZS		MS 648, Yarraman, 4614.	Tel 071 63 8261
Trevor Clement VK4YH		14 Gipps St, Nanango, 4615.	Tel 071 63 2565
Niel Cunningham VK4JX		PO Box 178, Torquay, 4655.	Tel
Gerry Fulton VK4GJ	Hervey Bay Amateur Radio Club	PO Box 829, Hervey Bay, 4655.	Tel 071 28 3232
Geoff Stephenson VK2BTU		14 Windsor Way, Pialba, 4655.	Tel 071 24 4764
Gray Taylor VK4OH	Hervey Bay Amateur Radio Club	PO Box 526, Hervey Bay, 4655.	Tel 071 25 7167
Ted Watson VK4EAW	Hervey Bay Amateur Radio Club	PO Box 829, Hervey Bay, 4655.	Tel 071 28 3489
Reg Wheller VK4ARW	Hervey Bay Amateur Radio Club	PO Box 829, Hervey Bay, 4655.	Tel 071 28 1383
Ken Blatchford VK4BKB	BARC Inc Exam Service	9 Que Hee St, Bundaberg, 4670.	Tel 071 51 3195
Tony Dorrough VK4NAD		15 Memory Blvd, Innes Park, 4670.	Tel 071 59 3474
Gerard Feerick VK4YK	BARC Inc Exam Service M/S	108 Hoffmans Rd, Burnett Heads, 4670.	Tel
Kev Meredith VK4LQ		36 Tarakan St, Bundaberg, 4670.	Tel
Bob Millgate VK4ADZ	BARC Inc Exam Service	9 Chapman St, Booloolah Bundaberg, 4670.	Tel 071 52 7482
Bernie Smallman VK4BFS		6 Williams St, MS 108 Burnett Heads, 4670.	Tel 071 59 4483
Glyn Gibbings-Johns VK4LA		M/S 882 Mount Perry Rd, Via Gin Gin, 4671.	Tel 071 56 3208
Noela MacDonald VK4ANJ	Gladstone Exam Service	98 Barney St, Gladstone, 4680.	Tel 079 72 5494 (AH)
Vic MacDonald VK4CA	Gladstone Exam Service	98 Barney St, Gladstone, 4680.	Tel 079 72 5494 (AH)
Merv Deakin VK4DV		PO Box 380, Rockhampton, 4700.	Tel 079 34 0193
Lyle Dobbs VK4ALD	WIAQ CQ Branch Rockhampton	265 Carpenter St, Rockhampton, 4701.	Tel 079 31 2775 (BH)
Nick Quigley VK4CNQ	WIAQ CQ Branch Rockhampton	265 Carpenter St, Rockhampton, 4701.	Tel 079 31 2388 (BH)
Clive Sait VK4ACC	WIAQ CQ Branch Rockhampton	265 Carpenter St, Rockhampton, 4701.	Tel 079 28 1173 (AH)
David Wilson VK4UN	Central Highlands ARC	6 Gum St, Tieri, 4709.	Tel 079 84 8442
David Christmas VK4DJC		27 Dee St, Mt Morgan, 4714.	Tel 079 38 1263
Don Blanch VK4ZFB	Biloela ARC	109 Grevillea Street, Biloela, 4715.	Tel
Hank Hahn VK4VCD	Biloela ARC	25 Don Street, Biloela, 4715.	Tel 079 92 1386
Mark Haseman VK4CMH	Biloela ARC	PO Box 315, Biloela, 4715.	Tel 079 92 2491
Graeme Martin VK4KGM	Biloela ARC	PO Box 291, Biloela, 4715.	Tel 079 92 3919
John Petersen VK4AXA	Central Highlands ARC	48 Littlefield St, Blackwater, 4717.	Tel 079 82 5126
Jim Storch VK4JVS		PO Box 147, Blackwater, 4717.	Tel 079 82 6279
James West		41 Blain St, Blackwater, 4717.	Tel 079 82 6756 (AH)
Lloyd West VK4QE		41 Blain St, Blackwater, 4717.	Tel 079 82 6756 (AH)
Geoff Bonney VK4GI	TAFE College Emerald	Capricorn Hwy, Emerald, 4720.	Tel 079 82 3699 (BH)
Bob Lee VK4CWL	Central Highlands ARC	PO Box 617, Emerald, 4720.	Tel 079 82 1096 (BH)
Pete Foster VK4COU		Cardbeign St, Springsure, 4722.	Tel 079 86 1882
Allan Abbott VK4ABP	Central Highlands ARC	PO Box 493, Longreach, 4730.	Tel 076 58 3111 (BH)
Lyle Farraher VK4KXM	Central Highlands ARC	PO Box 75, Longreach, 4730.	Tel 076 58 3793 (AH)
Wal Douglas VK4AIV	Mackay Amateur Radio Assoc	PO Box 1065, Mackay, 4740.	Tel 079 42 1615 (AH)
John Gillespie VK4MTF	Mackay Amateur Radio Assoc	PO Box 1065, Mackay, 4740.	Tel 079 55 2006 (AH)
George Glendinning VK4AJL	Mackay Amateur Radio Assoc	PO Box 1065, Mackay, 4740.	Tel 079 59 2436 (AH)
John James VK4CMA	Mackay Amateur Radio Assoc	PO Box 1065, Mackay, 4740	Tel 079 55 2333 (AH)
Ed Roache VK4KAA	Central Highlands ARC	21 Badila Crt, Mt Pleasant Nth Mackay, 4740.	Tel 079 42 1435 (AH)
Keith Carter VK4CKC	Bowen & Collinsville ARC	22 Soldiers Rd, Bowen, 4805.	Tel 077 86 2497
Brian Winterburn VK4BOW		7 Hay St, Bowen, 4805.	Tel 077 86 2367
Alan Stephenson VK4PS	Townsville ARC Inc	PO Box 5315 MSO, Townsville, 4810.	Tel 077 71 2513
John Stevens VK4AFS	Townsville ARC Inc	GPO Box 419, Townsville, 4810.	Tel 077 22 1113 (BH)
Ian Sutton VK4ZT	Townsville ARC Inc	PO Box 964, Townsville, 4810.	Tel 077 71 1211 (BH)
Roger Cordukes VK4CD	Townsville ARC Inc	1620 Ross River Rd, Kelso, 4815.	Tel 077 74 0221 (AH)
Bruce Jones VK4KIT	Mount Isa & District ARG	57 Brett Ave, Mount Isa, 4825.	Tel 077 43 5618 (AH)
Robert Mackie VK4SWR	Mount Isa & District ARG	PO Box 1429, Mount Isa, 4825.	Tel 077 43 0123 (AH)

Examiner	Group/Club	Address		Telephone
Keith Noll VK4AKA Mount	Isa & District ARG	23 Abel Smith Pde, Mount Isa,	4825.	Tel 077 43 3116 (AH)
Roger Wood VK4ARZ	Mount Isa & District ARG	PO Box 1715, Mount Isa,	4825.	Tel 077 43 5935 (AH)
Ted Golledge VK4AVG	Tropical Coast ARC	PO Box 1019, Innisfail,	4860.	Tel 070 61 4517 (AH)
John Mahoney VK4JON	Cairns Amateur Radio Club Inc	PO Box 194, Innisfail,	4860.	Tel 070 61 3857
Les Meier VK4EMI	Tropical Coast ARC	48 Laurie St, Innisfail,	4860.	Tel 070 61 2932 (AH)
Graham Bennett VK4FGB	Cairns Amateur Radio Club Inc	PO Box 1914, Cairns,	4870.	Tel 070 54 1448
Pat Laurenzi VK4MP	Cairns Amateur Radio Club Inc	PO Box 1426, Cairns,	4870.	Tel 070 54 4157 (AH)
Chris Parr VK4ANI	Cairns Amateur Radio Club Inc	PO Box 1215, Cairns,	4870.	Tel 070 51 0452 (AH)
Wilf Booth VK4ZNZ	Tableland Radio Club	MS 1318 McLean Rd, Yungaburra,	4872.	Tel 070 95 3888
Tom Debel VK4NIM	Tableland Radio Club	PO Box 13, Kairi,	4872.	Tel 070 95 8217
Rene Brank VK4MES	Thursday Island ARC	PO Box 410, Thursday Island,	4875.	Tel 070 69 1854 (AH)
Rex East VK4MIA	Thursday Island ARC	PO Box 418, Thursday Island,	4875.	Tel 070 69 1679
Bill Lochridge VK4WL	Torres Straits Examinations	C/-Post Office, Thursday Island,	4875.	Tel 070 69 1446 (AH)
Ron Goodhew VK4EMF	Tableland Radio Club	PO Box 253, Mareeba,	4880.	Tel 070 92 2888 (BH)
Chuck Waite VK5CQ		GPO Box 222, Adelaide,	5001.	Tel 018 80 4408
Graeme Bottger VK5AHQ	Port Adelaide Radio Club	68 Alma Terrace, Woodville West,	5011.	Tel 08 45 7465 (AH)
Harry Hillard VK5AHH	Port Adelaide Radio Club	PO Box 265, Port Adelaide,	5015.	Tel 08 49 7664
John McKellar VK5BJM	Port Adelaide Radio Club	5 Diosma Cres, Lockleys,	5032.	Tel 08 43 8386 (AH)
Christine Taylor VK5CTY	Taylor Radio Group	16 Fairmont Avenue, Black Forest,	5035.	Tel 08 293 5615
Geoff Taylor VK5TY	Taylor Radio Group	16 Fairmont Avenue, Black Forest,	5035.	Tel 08 293 5615
Alan Haines VK5ZD	Adelaide Hills ARS Inc	22 Moriane Ave, Panorama,	5041.	Tel 08 276 7091
Donald McDonald VK5ADD	WIA (SA Div) INC	6 Whittier Ave, Marion,	5043.	Tel 08 276 1251
Doug Head VK5DUG	Adelaide Hills ARS Inc	PO Box 401, Blackwood,	5051.	Tel 08 276 3688 (AH)
Phil Day VK5QT	Adelaide Hills ARS Inc	15 Main Rd, Belair,	5052.	Tel 08 366 2214 (BH)
Murray Burford VK5ZQ	WIA (SA Div) INC	261 Belair Rd, Torrens Park,	5062.	Tel 08 276 3393
Hans Smit VK5YX	Adelaide Hills ARS Inc	6 Jeffrey St, Hawthorn,	5062.	Tel 08 271 5350 (AH)
Rowland Bruce VK5OU	WIA (SA Div) INC	42 Gleneagles Rd, Mt Osmond,	5064.	Tel 08 379 4584
Rob Gurr VK5RG	Taylor Radio Group	35 Grandview Ave, Urrbrae,	5064.	Tel 08 379 1889
Doug Carruthers VK5KCQ	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5085.	Tel 08 287 2868
George Lindop VK5BGL	Port Adelaide Radio Club	28 Dyott Ave, Hampstead Gardens,	5086.	Tel 08 261 5910
Peter Watts VK5ZFW	North East Radio Club	18 Bendigo Cres, Modbury,	5092.	Tel 08 265 3332 (AH)
Rick Grivell VK5GV	North East Radio Club	43 Lincoln Cres, Pooraka,	5095.	Tel 08 262 5152 (AH)
Rob Gunnourie VK5FI	WIA (SA Div) INC	99 Maxwell Rd, Ingle Farm,	5098.	Tel 08 264 6581
Charlie McEachern VK5KDK	North East Radio Group	56 Wright Rd, Ingle Farm,	5098.	Tel 08 396 1131 (AH)
Carl Minerds VK5CHM	Elizabeth Amateur Radio Club	16 Dale Dve, Paralowie,	5108.	Tel 08 283 0304 (AH)
Ron Booth VK5ADQ	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5112.	Tel 08 258 6579 (AH)
Jim Martin VK5KOB	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5112.	Tel 08 287 2868
Dallas Taylor VK5WA	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5112.	Tel 08 259 6166 (BH)
Don Martin VK5AEY	Elizabeth Amateur Radio Club	268 Midway Rd, Elizabeth Downs,	5113.	Tel 08 287 1049
Don Wilton VK5KDW	WIA (SA Div) INC	PO Box 40, Littlehampton,	5250.	Tel 08 388 6966
Joe Nebl VK5PWC		9 Callington Rd, Strathalbyn,	5255.	Tel 085 36 2665
Ivan Huser VK5QV	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290.	Tel 087 25 5514
Trevor Niven VK5NC	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290.	Tel 087 25 5593 (AH)
Kevin O'Rorke VK5OA	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290.	Tel 087 25 3079
Bert Trupp VK5BVN	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290.	Tel 087 24 9826 (AH)
Clive Harman VK5ACH	Riverland Amateur Radio Club	PO Box 628, Renmark,	5341.	Tel 085 86 4204
John Ruston VK5ARK	Riverland Amateur Radio Club	PO Box 98, Renmark,	5341.	Tel 085 86 6127
Hugh Lloyd VK5BC	Riverland Amateur Radio Club	PO Box 743, Berri,	5343.	Tel 085 82 2690
Ron Godden VK5LAG	Goyder TAFE	120 Queen St, Peterborough,	5422.	Tel 086 51 2158
Peter Henderson VK5KDX	Goyder TAFE	24 Jervois St, Peterborough,	5422.	Tel 086 51 3061
Graham Johnston VK5SU	Mid North Repeater Group	25 Square St, Port Pirie,	5540.	Tel 086 32 4122 (BH)
Keith Pettman VK5NAX	Mid North Repeater Group	31 Henry St, Port Pirie,	5540.	Tel 086 32 3273 (AH)
Leo Vette VK5SO		36 Ferme St, Port Pirie,	5540.	Tel 086 33 0485 (AH)
David Bice VK5QU	Moonta Scout Group ARC	PO Box 133, Moonta,	5558.	Tel 088 25 2263
John Vayne VK5BL	Moonta Scout Group ARC	PO Box 133, Moonta,	5558.	Tel 088 25 2798
Jack Kleinrahm VK5AJK	Lower Eyre Peninsula ARC Inc	11 Luke St, Port Lincoln,	5606.	Tel 086 82 1466 (BH)
John Plevin VK5AEP	Lower Eyre Peninsula ARC Inc	18 Wandana Ave, Port Lincoln,	5606.	Tel 086 82 3161
Peter Baker VK5BWI	WHYCOM SA	49 Bastyan Cres, Whyalla Stuart,	5608.	Tel 086 45 2460 (BH)
Stuart Crowther VK5BWC	Whyalla Amateur Radio Club	68 Acacia Dve, Whyalla Stuart,	5608.	Tel 086 45 4331 (AH)
Alan Gilchrist VK5BWG	Port Augusta ARC	6 Kinnear Street, Port Augusta,	5700.	Tel 086 43 6455 (AH)
Peter Horgan VK5BWH	Port Augusta ARC	6 Kinnear Street, Port Augusta,	5700.	Tel 086 42 2363 (AH)
Bill Offler VK5BWO	Port Augusta ARC	6 Kinnear St, Port Augusta,	5700.	Tel 086 42 2855 (AH)
Phil Jamieson VK6ZPP	Northern Corridor Radio Group	11 Bromley Place, Kingsley,	6026.	Tel 09 409 1156 (AH)
Bryce Erskine VK6KBE	Northern Corridor Radio Group	90 Balga Ave, Balga,	6061.	Tel 09 349 9489
Phil Street VK6KS	Northern Corridor Radio Group	PO Box 97, Mirrabooka,	6061.	Tel 09 344 5241 (AH)
Rob Lamb VK6VP		10 Butterworth Ave, Koondoola,	6064.	Tel 09 247 3009
Des Kinnersley VK6ZJ	Northern Corridor Radio Group	34 Lalina Way, Wanneroo,	6065.	Tel 09 405 4215
Dianne Cousins VK6BC		2 Nottingham St, East Victoria Park,	6101.	Tel 09 361 3985
Glenn Cousins VK6AUZ		2 Nottingham St, East Victoria Park,	6101.	Tel 09 361 3985
Clyde Hillsdon VK6ZCH		3 Youngs Place, Parmelia,	6167.	Tel 09 419 5764 (AH)
Pat Haywood VK6PH	Peel Amateur Radio Group Inc	9 Baudin Way, Singleton,	6175.	Tel 09 537 1289
Rod Harrod VK6BRH	Peel Amateur Radio Group Inc	PO Box 1010, Mandurah,	6210.	Tel 09 535 7178 (AH)

Examiner	Group/Club	Address	Telephone
Rex Hickling VK6SN	Peel Amateur Radio Group Inc	PO Box 1010, Mandurah, 6210.	Tel 09 535 7992
Frank Langford VK6BLA	Peel Amateur Radio Group Inc	10 Clipper Way, Halls Head, 6210.	Tel 09 581 5028
Rev Suter VK6SA	The Amateur Radio Exam Centre	PO Box 261, Mandurah, 6210.	Tel
Con Murphy VK6PM		PO Box 88, Yarloop, 6218.	Tel 097 33 1978
Allen Byrne VK6OT	Bunbury Radio Club Inc C/-	PO Box 31, Bunbury, 6230.	Tel
Bill Harrison VK6WJH	Bunbury Radio Club Inc	PO Box 31, Bunbury, 6230.	Tel 097 34 4374 (AH)
Barry Mitchell VK6HX	Bunbury Radio Club Inc	9 Henley Dve, Bunbury, 6230.	Tel 097 91 1599 (AH)
Murray Peacock VK6YD	Bunbury Radio Club Inc	PO Box 31, Bunbury, 6230.	Tel 097 21 5442
John Thornborough VK6AJJ	Bunbury Radio Club Inc	PO Box 31, Bunbury, 6230.	Tel 097 97 1126
Peter Havord VK6BRN	Southern Electronics Group	PO Box 1491, Albany, 6330.	Tel 098 41 8028 (AH)
Bill Hoare VK6YWH	Southern Electronics Group	3 Finlay St, Albany, 6330.	Tel 098 41 6315
Aubrey Keightley VK6XY	Southern Electronics Group	242 Serpentine Rd, Albany, 6330.	Tel 098 41 3104
Tom Reed VK6TR	Southern Electronics Group	Lot 25 Shellbay Rd, Lower King, 6330.	Tel 098 447395
Ron Howrie VK6ANR	Goldfields ARG	PO Box 1281, Kalgoorlie, 6430.	Tel 090 91 4457
Alan Ransley VK6AJO	Goldfields ARG	214 McDonald St, Kalgoorlie, 6430.	Tel 090 21 7746 (AH)
Keith Gadsby VK6MKG	Esperance ARS	13 Westmacott St, Esperance, 6450.	Tel 090 71 2708 (AH)
Allan Juggins VK6QJ	Esperance ARS	PO Box 965, Esperance, 6450.	Tel 090 71 3090 (AH)
Graeme Smith VK6ATS	Esperance ARS	12 Young Place, Esperance, 6450.	Tel 090 71 2801 (AH)
Peter Zwarecz VK6APZ	Esperance ARS	PO Box 1116, Esperance, 6450.	Tel
Bob Hollingshead VK6KI		PO Box 1651, Geraldton, 6530.	Tel 099 64 2246 (AH)
Bob Marlow VK6PJ	Geraldton Amateur Radio Club	PO Box 2004, Geraldton, 6530.	Tel 099 21 1367 (AH)
Gordon Williams VK6IU		PO Box 259, Northampton, 6535.	Tel 099 34 1259
Steve Hill VK6PA	ARS Northwest Australia Inc	PO Box 410, Wickham, 6720.	Tel 091 85 4510 (AH)
Dave Holt VK6YA	ARS Northwest Australia Inc	PO Box 410, Wickham, 6720.	Tel 091 87 1926
Peter Dowd VK7PR	WIA Tasmanian Division 1	2 Susan Pde, Lenah Valley, 7008.	Tel
Andrew Dixon VK7GL	WIA Tasmanian Division	Faulkners Rd, Glenlusk, 7012.	Tel 002 39 0249 (AH)
Mike Jenner VK7FB	WIA Tasmanian Division	PO Box 641, Rosny Park, 7018.	Tel 018 12 1755
Bill Reid VK7JWR	WIA Tasmanian Division	40 Wentworth St, Bellerive, 7018.	Tel 002 44 4089 (AH)
Reg Emmett VK7KK	WIA TAS DIV Southern Branch	PO Box 26, Rokeby, 7019.	Tel 002 48 6824 (AH)
Graeme Reardon VK7ZGG	WIA TAS DIV Northern Branch	2 Trent St, Youngtown, 7249.	Tel 003 44 6636 (AH)
Bill Bower VK7AV	WIA TAS DIV Northern Branch	40 Amy Rd, Launceston, 7250.	Tel 003 44 1584 (AH)
Mike Collinson VK7MA	WIA TAS DIV Northern Branch	PO Box 986, Launceston, 7250.	Tel 003 26 0751 (BH)
Barry Hill VK7BE	WIA TAS DIV Northern Branch	611 West Tamar Rd, Riverside Launceston, 7250.	Tel 003 27 2096
Gary Hammond VK7KYZ	WIA TAS DIV Northern Branch	PO Box 82, Beaconsfield, 7270.	Tel 003 83 1275
Ron Churcher VK7RN	WIA Tasmanian Division	PO Box 277, Devonport, 7310.	Tel 004 24 6366 (AH)
Tony Clayton VK7AH	WIA Tasmanian Division	10 Wrenswood Dve, Quoiba, 7310.	Tel 004 24 5375 (AH)
David Spicer VK7ZDJ	WIA Tasmanian Division	5A Helen St, Ulverstone, 7315.	Tel 004 25 2030
Phil Harbeck VK7PU	WIA Tasmanian Division	14 Kennedy St, Burnie, 7320.	Tel 004 31 3020
Clarrie Hilder VK7HC	WIA Tasmanian Division	5 Speed St, Cooee, 7320.	Tel 004 31 8211
Shane Lynd VK7KHZ	WIA Tasmanian Division	14 Read St, Tullah, 7321.	Tel 004 73 4256 (AH)
Steve Bush VK7EQ	WIA Tasmanian Division	PO Box 123, Somerset, 7322.	Tel 004 35 1043
Dick Van Beek VK7KVB	WIA Tasmanian Division	31 Beech Dve, Rosebery, 7470.	Tel 004 73 1693 (AH)

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WIA News

World Radio Conferences Planned

The World Radiocommunication Conference held last November in Geneva (WRC 93) finalised planning for the next two World radiocommunication conferences which will be held in 1995 and 1997.

According to a release from the International Telecommunications Union, the 1995 WRC is expected to simplify international radio regulation procedures, including new, less complex, processes for coordinating and registering radio frequency assignments. WRC 95 is also expected to look at frequency bands for satellite mobile communications services as a follow-up to the decisions made at WARC 92 (the last of the old World Administrative Radio Conferences held every decade or so).

The bi-annual conferences are expected to speed up decisions as technologies and market pressures drive changes in radio communications. This will mean more work for radio amateur organisations in having a say in international radiocommunication regulations.

The draft agenda for WRC 95 includes a look at alternatives to the way in which radio spectrum is allocated, review technical constraints associated with allocations for mobile satellite services below 3 GHz to facilitate using those bands (which will likely bring some pressure on UHF amateur allocations below 3 GHz) and the use of HF bands newly allocated to broadcasting, among other things.

The provisional draft agenda for WRC 97 includes such items as examining spurious emission issues, wind profiler radars, the use of HF bands allocated to broadcasting and various satellite service matters.

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Stolen Equipment Register

The Stolen Equipment Register is one of many services offered to members by the WIA. It has been in operation since 1980, and is maintained on a computer database in the Federal Office.

Members wanting to take advantage of the Register, either to publicise the theft of their equipment, or to check equipment they are about to purchase, may write, fax, or telephone the Federal Office.

Any telephone reports of stolen equipment **MUST** be followed by written confirmation of the details.

For maximum efficiency, these details should include Manufacturer's name, model, type of equipment, serial number, date stolen, owner's name, address and callsign, any distinguishing features or modifications and the police contact (if any).

When equipment is recovered it is important that you advise the Federal Office as soon as practicable.

The following list is the most up-to-date information available at the time of going to press, but is based entirely on information received from you, the member. Would all members please check this list and immediately advise if there are any amendments.

Only those items stolen in the past five years are included in this list.

Manufacturer	Model	Description	Serial Number	Owner	Date Stolen	Comment
AEA	PAKRATT	MULTIMODE TNC	19092	VK3XBE	28.07.91	
ALINCO	ALD24T	2M/70CM MOBILE RIG	10107310	VK2TPH	21.01.91	DIPLEXER FITTED 2 ANTENNA CABLES
	DJ-100T	H/HELD & RD ANTENNA	0005049	VK2KIQ	17.10.93	CALLSIGN PAINTED ON BODY
	DR112T	2M FT TRANSCEIVER	0006697	VK1DA	13.09.93	PART OF MOUNT BRACKET & MICROPH
AMSTRAD	PC700	LAPTOP COMPUTER	532-872380	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
BELCON	LS-202E	2M M/MODE H/HELD	401992	VK3YYD	07.11.90	
BWD	804	DC-10MHZ SCOPE	51767	VK2ZQW	11.01.90	—
CHIRNSIDE		5 MOB HF ANTENNAS		VK3AMM	26.03.92	
COMMODORE	1541 II	DISK DRIVE		VK5ALE	03.04.91	ENGRAVED L.E.P.A.R.C.
	64	COMPUTER		VK5ALE	03.04.91	ENGRAVED L.E.P.A.R.C.
DAIWA	2M 70 CM	CROSSNEEDLE SWR MTR		VK3XBE	28.07.91	
	CN-620A	SWR/POWER METER	—	VK2DQP	16.09.91	
	CNW-419	ANTENNA TUNER		VK3XBE	28.07.91	
DICK SMITH		2M 5/8 MOBILE WHIP		VK3AMM	26.03.92	
	T-2000	SOLDERING STATION	—	VK2DQP	16.09.91	
DRAKE	TR-7	HF TRANSCEIVER	2333	VK2AML	16.05.90	OWNERS NAMES ENGRAVED
EMTRONICS		NOISE BRIDGE	EM342	VK4AAE	27.10.89	-
FDK	MULTI 7	2M TRANSCEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 O
GCOL	GV-16	2 M FM HANDHELD		VK3JDO	17.11.89	WITH ANTENNA
GME	TX472S	40 CH UHF T/CEIVER	912 48058	VK3KLF	14.06.90	-
	TX472S	40 CH UHF T/CEIVER	006-62229	VK7GQ	15.02.93	NO DISTINGUISHING FEATURES
	TX830	40 CH AM CB	8770556	VK4IS	15.08.90	-
GOODWILL	GFC8055F	DIGITAL FREQ COUNTER	2020452	VK2IT	07.08.91	
HOME BREW	—	ANTENNA TUNING UNIT	—	VK2DQP	16.09.91	
	—	ELECTRON MORSE KEYER	—	VK2DQP	16.09.91	
HOMEBREW		6M 60W LINEAR AMP		VK3AMM	26.03.92	
ICOM	2410H	MOBILE RADIO	2668	STEWART ELEC	25.04.92	
	2SAT	HAND HELD	1387	STEWART ELEC	25.04.92	
	2SRA	HAND HELD	3299	STEWART ELEC	25.04.92	
	735	MULTI-MODE HF RADIO	38065	STEWART ELEC	25.04.92	
	HM4G	SPEAKER MIC	—	VK5ZGB	16.12.89	—
	IC02A	2 M FM HANDHELD	29906249	VK5ZGB	16.12.89	—
	IC02A	2M FM HANDHELD	23186	VK2FZH	09.06.89	WITH BP3 AND BC25E
	IC02AT	2 M HAND HELD	406070630	VK2OG	08.10.91	
	IC044	70 CM FM HANDHELD	—	VK5ZGB	16.12.89	—
	IC1271A		001398	VK3XBE	28.07.91	
	IC211	2 M TRANSCEIVER	—	VK2IT	07.08.91	WITH MICROPHONE
	IC22	2M FM TRANSCEIVER	12467	VK1TR	06.02.90	NO POWER PLUG/DIAL LAMP UNUSUAL
	IC22	2M FM TRANSCEIVER	10918	VK3XD	08.02.90	—
	IC225	2M MOBILE	62015291	VK5ZFW	30.08.93	SLIGHT HUM IN BACKGROUND
	IC22S	2M FM TRANSCEIVER	I5674	VK2CIB	11.02.89	—
	IC255A	VHF TRANSCEIVER	10308425	VK3KLF	14.06.90	—
	IC271A	2M ALL MODE TRCVER	27402603	VK3XBE	28.07.91	
	IC27H	2M MOBILE TRANSCEIV		VK2KFK	20.04.93	REAR HEATSINK BROKEN/EPOXIED
	IC290A	ALL MODE TRANSCEIVER	001532	VK3YFA	01.11.90	—
	IC2GAT	2M FM HANDHELD	08616	VK3JDO	17.11.89	WITH BP70, BC36, BPSA X 2
	IC471A	70 CM TRANSCEIVER	20801900	VK3XBE	28.07.91	
	IC560	6M TRANSCEIVER	01153	VK3MT	01.02.90	ENGRAVED SECURITY NO. T-00510
	IC560	6 M TRANSCEIVER	02057	VK2IT	07.08.91	WITH MICROPHONE
	IC701	HF TRANSCEIVER	02318	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
	IC721	HF TRANSCEIVER	003663	A. WOJNAR	02.07.90	TRANSCEIVES ALL RFDS FREQUENCIES
	IC730 HF	TRANSCEIVER	13814689	VK3MT VK3COT	05.11.92	DC POWER CORD NOT TAKEN
	IC735	HF TRANSCEIVER	#06196	RMIT	06.12.92	ENGRAVED HEATSINK & TOP COVER

Manufacturer	Model	Description	Serial Number	Owner	Date Stolen	Comment
	IC735	HF TRANSCEIVER	020254	VK2AZI	16.12.92	INC MOUNTING BRACKET/MICROPHONE
	IC735	PSU POWER SUPPLY	#0180	RMIT	06.12.92	
	IC745	HF TRANSCEIVER		VK3XBE	28.07.91	
	ICR70	COMMS RECEIVER	18503539	VK3XBE	28.07.91	
	ICR7000	COMMS RECEIVER	002670	VK3XBE	28.07.91	
	P2AT	HAND HELD	1817	STEWART ELEC	25.04.92	
	PS30	POWER SUPPLY	20302017	VK3XBE	28.07.91	
	R1	WIDE BAND RECEIVER	64395	STEWART ELEC	25.04.92	
	SM6	DESK MICROPHONE	20507750	VK3XBE	28.07.91	
	W2A	DUAL BAND HAND HELD	1866	STEWART ELEC	25.04.92	
KENWOOD	309 VFO	VFO TO SUIT TR7200G	440168	VK5ALE	03.04.91	TYPE 30G
	DM81	GRID DIP OSCILLATOR	4020163	VK2KLF	10.08.89	STENCILLED IN 20MM BRIGHT YELLOW
	LF-30A	LOW PASS FILTER	—	VK2ADP	16.09.91	
	MC 50	MICROPHONE	—	VK2DQP	16.09.91	
	MS1	MOBILE MOUNT	—	VK5BJA	30.05.89	—
	PS430	POWER SUPPLY		VK3CLV	16.12.91	
	SMC/3C	H/HELD MIC & SPEAKER	—	VK2PRK	25.07.91	
	TH75A	VHF/UHF HAND HELD	0061315	VK6KCH	26.02.92	CASE — SPKR/MIC — MOB POWER LEAD
	TM201B	VHF TRANSCEIVER	7011611E	VK3CLV	16.12.91	
	TM221A	2M FM TRANSCEIVER	8022576	VK7GQ	15.02.93	NO DISTINGUISHING FEATURES
	TM22IA	2M FM TRANSCEIVER	8022583	VK3KGM	04.11.92	
	TM231A	2M FM TRANSCEIVER	0051016	VK4IS	27.07.90	—
	TM441A	432 MHZ FM TRANSC	6010370	VK4IS	27.07.90	—
	TR2600A	2M HANDHELD TCVER	5060934	VK2KLF	10.08.89	MISSING HAND STRAP
	TR2600A	2M HANDHELD	5060895	VK5BJA	30.05.89	INCLUDING RUBBER DUCK ANTENNA
	TR7200G	2M TRANSCEIVER	111048	VK5ALE	03.04.91	
	TR751A	144 MHZ TRANSCEIVER	7050702	VK3HY	23.04.92	NO IDENTIFICATION
	TR751A	2M ALL MODE T/CEIVER	7050512	VK3KMJ	25.02.90	GREY MIC — DCL MODEM BOARD
	TS120S	HF TRANSCEIVER	0010035	VK2EV	05.06.92	WITH MIKE AND 12V POWER LEAD
	TS120S	HF TRANSCEIVER	0070741	VK5AKN	12.05.92	ENGRAVED WITH DRIVERS LICENCE NO
	TS120V	HF TRANSCEIVER		VK2NVS	16.12.93	LIC NO N674522 ON BACK
	TS440S	HF TRANSCEIVER	7090271	VK2FIT	24.10.89	WITH PS50 PSU & MC85 DESK MIC
	TS440S		7031310	VK6ID	25.08.91	
	TS440S	HF TRANSCEIVER	R 7060309	VK3CLV	16.12.91	SP40 SP50 EXTERNAL SPEAKERS
	TS440S	HF TRANSCEIVER	9100338	VK6ELL	01.02.92	
	TS440S	HF TRANSCEIVER	0060078	VK2FIT	01.07.90	—
	TS440S	HF TRANSCEIVER	0101192	VK3NRG	14.10.90	STOLEN FROM VEHICLE IN PERTH
	TS520	HF TRANSCEIVER	010296	VK2ZQW	11.01.90	—
	TS520S	HF TRANSCEIVER	?	VK2FZH	09.06.89	STICKER FROM "TURKEY RADIO"
	TS520S	HF TRANSCEIVER	560762	SPARC	16.06.93	
	TS520SE	HF TRANSCEIVER	8650	VK5ALE	03.04.91	
	TS670	6M & HF TRANSCEIVER	?	VK2ZXC	28.06.90	—
	TV506	6M CONVERTER	720089	VK2ZQW	11.01.90	—
KING AIR	AIRCRAFT BAN	TRANSCEIVER		VK6ID	25.08.91	
KYOKUTO	FM144	VHF FM TRANSCEIVER	8296	VK2ZQW	11.01.90	—
M/WAVE MODULE	MML-432-50	70 CM 50W AMPLIFIER		VK3XBE	28.07.91	
MICROMETER		SWR METER	NOT KNOWN	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
MICROWAVE	40W-144 MHZ	2M LINEAR AMPLIFIER	—	VK2ZQW	11.01.90	—
MIRAGE		2M 150W AMPLIFIER		VK3XBE	28.07.91	
		2M 60W AMPLIFIER		VK3XBE	28.07.91	
PAC-COMM	TINY 2	TNC	T5782	GOULBURN ARC	27.11.92	
	TINY 2	TNC	T6784	GOULBURN ARC	27.11.92	
PACCOM	DR200	DUAL PORT TNC	2231	VK2RDX	27.05.91	RELAY IN BOX IN DC SUPPLY LINE
PACCOMM	TINY 2	TNC	T5359	VK5ALE	03.04.91	WITH MANUAL
PHILIPS	1680	VHF MOBILE T/CEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 O
	323	UHF CB HANDHELD		VK6ID	25.08.91	2 OFF CH 17 AND 20
	FM321	70CM FM TRANSCEIVER	156	VK2IT	07.08.91	WITH MICROPHONE
	PRM80	VHF TRANSCEIVER	NOT KNOWN	VH3HY	23.04.92	4 COMM 3 X 144 MHZ RPTR CHANNELS
	SXA	UHF CB HANDHELD		VK6ID	25.08.91	2 OFF CH 17 AND 20
PHILLIPS	828	2M FM TRANSCEIVER	44982	VK4IS	15.08.90	10 CHANNELS — 3 FITTED
	FM828	VHF TRANSCEIVER		VK5ALE	03.04.91	1 CHANNEL 147.575
	FM828	FM TRANSCEIVER	45459	GOULBURN ARC	27.11.92	
REALISTIC		SCANNING RECEIVER		VK6ID	25.08.91	BNC SOCKET
SAWTRON	999	UHF CB TRANSCEIVER	203026	VK2KSN	24.04.92	
SONY	2001D	COMMUNICATIONS RECVR ?	VK2FZH	09.06.89	BROKEN ANTENNA	
STANDARD	C146A	2M TRANSCEIVER		VK3XCE	05.10.92	XTALS FITTED RPT 6700-7000-6500
	C520	2M & 70 CM HANDHELD	F140829	ANDREWS COMM	18.02.90	STOLEN AT GOSFORD FIELD DAY
	C528	2M HAND HELD OOE	130667	VK2PD	27.08.92	MANUAL TAKEN BUT NOT RUBBER DUCK
	C528	2M HAND HELD	OOE150667	VK2PD	27.08.92	MANUAL ALSO
	CAT08	MIC/SPEAKER		VK3XCE	05.10.92	
	CMPO8	RUBBER DUCK ANTENNA		VK3XCE	05.10.92	

Manufacturer	Model	Description	Serial Number	Owner	Date Stolen	Comment
STC	MT36	SWR BRIDGE		VK2RDX	27.05.91	
	MTR25 191B	VHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
	MTR25 191D	UHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
SWAN	MB40	40 M MOBILE T/CEIVER	16471	VK2IT	07.08.91	
TELEQUIP'T	551	OSCILLOSCOPE		VK4AAE	27.10.89	—
TONO	THETA 550	KEYBOARD TERMINAL	821485	VK3XBE	28.07.91	
UNIDEN	PC122	SSB/AM CB TRANSCEIVR	NOT KNOWN	VK3HY	23.04.92	PHILIPS MICROPHONE
VIBROPLEX	—	MORSE KEY	—	VK2DQP	16.09.91	
WELZ		SWR/POWER METER		VK2AZI	16.12.92	
YAESU	FC 700	A T U	4J090473	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
	FC700	ANTENNA TUNER		VK2NVS	16.12.93	LIC NO N674522 ON BACK
	FC707	ANTENNA TUNER	1L170086	VK2CFC	06.09.91	
	FC707	ANTENNA TUNER	1N180265	VK4AAE	27.10.89	—
	FP700	POWER SUPPLY	3C-020584	VK4BWG	11.03.92	
	FP707	POWER SUPPLY	1L150596	VK2CFC	06.09.91	
	FP707	POWER SUPPLY	4C050487	VK4AAE	27.10.89	—
	FRG7	HF RECEIVER	8HH210862	VK2IT	07.08.91	
	FRG7700	RECEIVER	3M260983	VK2XPU	01.08.89	—
	FRG9600	SCANNING RECEIVER	5 N 120767	DICK SMITH	01.11.91	STOLEN FROM BENDIGO VIC STORE
	FT-280R	2M TRANSCEIVER	2F22898	VK3XCE	05.10.92	
	FT101B	HF TRANSCEIVER	320376	VK2IT	07.08.91	WITH DESK MICROPHONE
	FT101E	HF TRANSCEIVER	8J361432	VK2DQP	16.09.91	
	FT101E	HF TRANSCEIVER	7K/301042	VK5EZ	08.07.89	—
	FT102	HF TRANSCEIVER	3K090835	VK2FLM	23.12.90	ENGRAVED NO B62075 YM-36 MIC
	FT208R	2M FM HANDHELD	4E382078	VK2PJ	29.03.89	FAULTY VCO
	FT208R	2M HANDHELD TRCVR		VK3XBE	28.07.91	
	FT209RH	2M FM HANDHELD	6E-260229	VK4BWG	11.03.92	FNB4 & FBA10 BATTERY PACKS
	FT209RH	2M FM HANDHELD	NOT KNOWN	VK6KAD	08.02.93	BROKEN BATTERY RETAINING CLIP
	FT211RH	2 M MOBILE TX	8M180306	VK2UP	09.07.92	FROM MOTEL HURSTVILLE
	FT212RH	2 M TRANSCEIVER	IC630020	VK2XMM	01.07.91	
	FT230R	2M FM TRANSCEIVER	2M120897	VK2JCC	10.02.93	
	FT23R	2M FM HANDHELD	OD071763	DSE BOX HILL	18.09.91	
	FT2700RH	VHF/UHF TRANSCEIVER	5L121354	VK2AGB	28.05.92	
	FT290R	2M FM TRANSCEIVER SF	280702	VK4AAE	27.10.89	COMPLETE WITH NICADS
	FT290R11	2M FM TRANSCEIVER	8G130128	VK3YNB	04.06.92	WITH BATTERY BOX
	FT290RII	2M FM TRANSCEIVER	9F240010	VK2BVR	10.03.93	
	FT415	2 METRE HAND HELD	2I 172773	DICK SMITH	05.05.93	
	FT415	2 METRE HAND HELD	2I 173633	DICK SMITH	05.05.93	
	FT470	DUAL BAND HAND HELD	9L150788	DICK SMITH	31.08.90	STOLEN FROM BOURKE ST MELB STORE
	FT470	DUAL BAND HAND HELD	1 K 430817	D SMITH ELEC	31.12.92	
	FT4700RH	VHF/UHF TRANSCEIVER	9C212240	VK3EMJ	16.07.91	NO MICROPHONE OR POWER LEAD
	FT7	HF TRANSCEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 O
	FT7	HF TRANSCEIVER	—	VK2PRK	25.07.91	ID "NSW 718610" ENGRAVED ON BACK
	FT707	HF TRANSCEIVER	0G030440	VK3AMM	26.03.92	
	FT707	HF TRANSCEIVER	—	VK4AAE	27.10.89	—
	FT708R	70CMS FM HANDHELD	2J181463	VK2PJ	29.03.89	—
	FT712	UHF TRANSCEIVER	81120576	GOULBURN ARC	27.11.92	
	FT757	HF TRANSCEIVER	4E-071058	VK4BWG	11.03.92	
	FT757GX	HF TRANSCEIVER	4J121785	VK2CFC	06.09.91	RF AMP NOISY — REQUIRES SERVICE
	FT757GX II	HF TRANSCEIVER	IL590102	DICK SMITH E	13.05.92	STOLEN FROM PARRAMATTA STORE
	FTV707	6M TRANSVERTER	1H010331	VK3AMM	26.03.92	
	FV707DM	EXTERNAL DIGITAL VFO	0L060097	VK4AAE	27.10.89	—
	SP4	EXTENSION		VK2AZI	16.12.92	
	YC355D	200MHZ FREQ COUNTER	—	VK2ZQW	11.01.90	—
	YM24A	MIC/SPEAKER		VK3XCE	05.10.92	
	YP150	DUMMY LOAD/PWR METER		VK3XBE	28.07.91	ar

WIA News

Federal Council Matters

The next quarterly meeting of the Federal WIA Council and Board is scheduled to be held on the weekend of 19-20 February. A topical item of interest on the agenda will be the first report of the Board subcommittee appointed to examine issues relating to the publication of *Amateur Radio* magazine.

David Wardlaw VK3ADW attended a seminar on "Access to the Spectrum and the New Radiocommunications Act" last November. The IREE's Communications Conference 93, which was to be attended by one Board director, was cancelled at the last minute. The IREE cited poor registrations as the reason for cancelling.

WIA Videotape Library

c/- Bob Godfrey VK4BOB
20 Buckra Street, Bracken Ridge, QLD 4017
Phone (07) 269 5380 — home

Now every radio club can provide its members with quality technical lectures on subjects covering the whole range of Amateur Radio activities by taking advantage of the WIA Federal Videotape Library. You'll find this a boon particularly if yours is a country club which often has difficulty obtaining a variety of expert lecturers for its regular meetings. (Individual Amateurs and Librarians should take note of the duplication fees at the end of this article.)

For radio clubs affiliated with the WIA it's inexpensive and easy. Here's how it works. For those titles which the WIA has placed in the public domain, all you have to do is supply the WIA Video Co-ordinator (address above) with...

— a list of requested titles,
— a blank video cassette,
— a "VCB" *Postpak,*
— and enclose your address and stamps for return postage.

The program is then free for your use in the support of amateur radio in your area, including duplication and transmission over Amateur Television if you wish.

Those programs which are copyright are indicated by the C symbol and are available only ON LOAN. To obtain any Loan Item supply the WIA Video Co-ordinator (address above) with...

— your requested title,
— information about your preferred VCR format,
— enclose your address and stamps for postage to you,
— and a statement signed by a responsible member of your club that "I undertake that while (program title) is assigned to me, I will not allow it to be copied or transmitted by any means whatsoever, and that I will return the same promptly after showing".

Note: the WIA does not hold a licence from the copyright owners of certain titles; therefore no loan or copy service is available for those so marked; they are held for WIA Archive purposes only.

The present "preferred VCR format" is Standard Play VHS. For estimation of postage, a 3 hour VHS cassette measures 200x100x30 mm and weighs 350 gm.

New Air-Mail Postal Regulations. To avoid disappointment by lack of arrival of late-minute requests, this important change in Postal Regulations should be allowed for by Club Activity Organisers. All packages being sent by Airmail *MUST* now carry a declaration sticker certifying that the contents are not dangerous or prohibited. For items weighing less than 500 gm. (ie one VHS cassette) pink stickers are obtainable from any Post Office. Items weighing more than 500 gm can only be posted at an official Australia Post Office and a complete declaration of contents must be made. Any item not carrying the correct sticker will not be transported by air, regardless of whether the correct value of stamps for Air Mail have been affixed.

A note to individual amateurs. From the inception of the WIA Federal Video Service cassettes were freely available to all comers. However, in order to stem the rising tide of requests for copies of programs from individual amateurs (some of whom asked for over 10 hours of programs at a time) there is now a duplication fee (payable in advance) of $2 per hour or part there-of to individuals. Isolated or disadvantaged individual amateurs will however continue to receive free concession.

A note to librarians. A number of educational institutions have already availed themselves of the of the WIA technical lecture tapes. A duplication fee of $10 per hour or part there-of is payable in advance by all institutions not affiliated to the WIA.

A note regarding cassette quality. The WIA Videotape Co-ordinator reserves the right to refuse to copy onto inferior quality video tape. Video dubbing is a real-time, one-at-a- time operation and in the past low quality tape has been the cause of many lost hours due to clogged heads, etc. Libel laws prevent publication of a list of manufacturers of suspect tape, however, most of the **well known** brand names are acceptable; in particular use only those tapes bearing the official "VHS" logo.

Finally a note to all radio clubs. No new titles have been added to the library during the last 12 months. Has your club video taped any interesting lectures that would be of interest to other amateurs? If so, please contact me at the above address so that I can arrange for a suitable copy to add to the library.

WIA Videotape Program Title Listing as of 1/1/94

NOTE
"c" = Copyright; no copy service
"*" = Optically Converted to PAL from NTSC by WB2LLB; noticeable flicker.
"w" = available ONLY to Radio Clubs Affiliated with the WIA as per agreement with OTC
"o" = program now out of date
Standard Format: "VHS" Standard Play.

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
Amateur Radio — Historic Interest							
c	Wireless Telegraphy -circa 1910		?	10mins	B&W	1910	Archive material courtesy David Wardlaw VK3ADW
c	Amateur Radio — TV Pilot		WIA NSW	30mins	B&W	1968	Archive material courtesy TEN channel 10
—	Opening of Burley Griffen Bldg SA HQ		VK5KG	45mins	Col	1977	Archive material
—	ATV in Australia 1978 made for British ATV Club		VK5KG	30mins	Col	1978	Archive material
—	ATV in United Kingdom 1978 reply from BATC		G8CJS	30mins	Col	1978	Archive material
—	ATV in Australia 1980/81 Made for British ATV Club		VK5KG	60mins	Col	1980	Clips from ATV Groups in VKs 2,3,4,5 & 7
—	History of ATV in South Australia		VK5KG	30mins	Col	1980	Archive material, still building
—	ATV in United Kingdom 1978/81		G8CJS	30mins	Col	1981	Remake of their previous effort
o*	CQ ATV DX International 1983		WB2LLB	60mins	Col	1983	ATV in USA and Europe
—	High Definition TV Tutorial	Don Fink	WB2LLB	60mins	B&W	1983	A look at what is to come in Broadcast TV
—	ATV Hamfest, York Pennsylvania Sept."83	Various	WB2LLB	6hrs	Col	1983	Various ATV technical lectures from USA

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
—	Opening of Amateur Radio House — NSW HQ		VK2BDN	102mins	Col	1983	Archive material
—	ATV in Victoria, 1984		VK3AHJ	54mins	Col	1984	Courtesy of "The Roadshow Gang"
c	"Journey to the White Volcano" The Heard Island Dxpedition				Col	1983	
c	Heard Island Dxpedition		ch 2,7,9,10	20mins	Col	1984	Archive material; NO LOAN OR COPY AVAILABLE
—	Keynote speeches by Fed Pres David Wardlaw & State DOC Manager John Milton		WIA NSW	135mins	Col	1985	From WIA 75th Anniversary Seminar
—	Heard Island Dxpedition	VK2BCC	WIA NSW	60mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
Amateur Radio — Promotional							
o	The Ham's Wide World		ARRL	27mins	Col	1969	Superseded by "The World of Amateur Radio"
—	This is Amateur Radio		ARRL	15mins	Col	1970	Pitched at teenagers
—	Moving Up to Amateur Radio		ARRL	11mins	Col	1975	Pitched at CBers
c	7J1RL DXpedition		JARL	60mins	Col	1976	General Amateur Radio interest; LOAN ONLY
—	This Week has 7 Days looks into Amateur Radio		HSV7	25mins	Col	1978	Pitched at teens; includes some ARRL footage.
o	The World of Amateur Radio		ARRL	26mins	Col	1978	Superseded by "The New World of Amateur Radio".
—	Amateur Radio — The National Resource of Every Nation		VK5KG	6mins	Col	1979	Encapsulates AR; good for public exhibitions
—	Amateur Radio — The National Resource of Every Nation		VK5KG	60mins	Col	1979	Continuously running version available ON LOAN
—	The New World of Amateur Radio		ARRL	28mins	Col	1988	Supersedes "The World of Amateur Radio"
Antennas							
c	G6CJ's Aerial Circus	G6CJ	WIA	90mins	B&W	1977	THE Definitive Antenna Lecture; LOAN ONLY
—	Wire Antennas	VK5RG	VK5KG	40mins	B&W	1978	Antennas for HF and Antenna Tuners
—	Loaded Wire Antennas	VK5NN	VK5KG	50mins	Col	1980	Using Inductive and Capacity loaded Antennas
w	Antennas and Directivity	VK2BBF	OTC	73mins	Col	1985	Lecture given to a group of Radio Amateurs
—	Antenna Rotator Systems	VK5AIM	VK5KG	50mins	Col	1986	Servicing the several different types
—	Broadband Antennas	VK5RG	VK5KG	62mins	Col	1986	Includes terminated antennas
ATV — Activity							
—	ATV Item from UK (via Doug VK6ER)				Col	1984	Unedited clips
—	Hello from America! Made for British ATV Club*		WB0-QCD	100min	Col	1988	Clips from ATV Groups in the USA
—	VK5 ATV Call-in		VK5ZBD		Col	1990	Made for VK4XRL who had recently visited
ATV — General Interest							
—	Low Definition Television	Chris Long	VK5KG	25mins	Col	1982	Re-creation of TV as transmitted by Baird.
—	Model Aero-Nautical Mobile ATV	VK5GO	VK5KG	6mins	Col	1983	ATV camera & TX mounted in a model aeroplane.
—	VK5RCN — Aust."s first wind powered ATV repeater.	VK5KAU	VK5KG	61mins	Col	1986	Tour of VK5RCN by Barrey Bryant (silent key).
—	Australian TV History The Untold Story	Chris Long	VK5KG	56mins	Col	1988	Lecture to Radio Amateurs Old Timers Club.
—	Australian TV History — Part 2	Chris Long	VK5KG	49mins	Col	1988	Technical slides not used in the above.
—	The Development of the TV Test Card	George Hersee	G8PTH	43mins	Col	1988	Made for BATC by the BBC Training Dept.
—	TV for Amateurs		BATC	19mins	Col	1990	Excellent introduction to ATV
—	The first nation-wide ATV AUSSAT TV	Gladesville ARC	2hours	Col	1990	Noisy off-satellite but interesting.	

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
ATV — Technical							
o	The Signal to Noise Story	VK3ATY	VK3AHJ	45mins	Col	1982	Superseded by "UHF Pre-amplifiers" (below).
—	UHF Preamplifers	VK3ATY	VK3AHJ	45mins	Col	1983	Explanation and demo. of low noise preamps.
—	Getting Started in Amateur Television	VK5KTV	VK5KG	55mins	Col	1983	How to set up an ATV station
—	Testing ATV Transmitters	VK5KG	VK5KG	50mins	Col	1983	How to correctly measure ATV systems.
Computers							
—	Demo. of VK5RTV's Micro-Computer Controller #1	VK5KG	VK5KG	10mins	Col	1979	First u-Computer controlled repeater in VK.
o	Understanding Micro-Processors	VK5PE	VK5KG	60mins	Col	1980	A somewhat dated technical description.
o	An ATV Hamshack Micro-Computer	VK3AHJ	VK3AHJ	10mins	Col	1981	Describes now unavailable microcomputer kit.
—	Getting Started in Amateur Micro-Computers	VK5IF	VK5KG	33mins	Col	1983	Demo of hard & software for Amateur Radio.
Data Transmission							
—	Getting Started in Amateur RTTY	VK5JM	VK5KG	85mins	Col	1983	RTTY using teleprinters and Micro-Computers.
—	Amateur Packet Radio	VK5AGR	VK5KG	60mins	Col	1984	Theory and Demonstration.
—	Packet Radio Lecture by Jim Swetlikoe				Col	1984	From WIA Seminar
—	Packet Radio — 10 months on	VK2KYJ VK2AAB	WIA NSW	65mins	Col	1985	Raw Unedited; from 75 aniv. VK2 Seminar.
w	X25 Protocols and Packet Switching	VK2ZXB	OTC	47mins	Col	1986	Lecture given to a group of Radio Amateurs.
New	Amateur Satellites and Packet Radio	VK5AGR	Gladesville ARC	130 mins	Col	1989	
Microwave Techniques							
—	Introducing Microwaves	VK5ZO	PJ Video	74mins	Col	1988	Des Clift gives a "Nuts & Bolts" expert technical lecture
Propagation							
—	Getting Started in Understanding the Ionosphere	VK5NX	VK5ZBD	50mins	Col	1983	How the Ionosphere aids HF communication
—	Moonbounce EME lecture by Lyle Patison	VK2ALU			Col	1984	From WIA Seminar
—	VHF Signal Enhancement by Aircraft	VK2ZAB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
New	HF DX Seminar with Iris & Lloyd Colvin		Gladesville ARC	74 mins	Col	1990	
Satellites							
o	Getting Started in Amateur Satellites	VK5HI &	VK5KG VK5AGR	60mins	Col	1983	Superseded (see below)
o	An Introduction to Amateur Satellites (Pt 1)	VK5AGR	VK5KG	60mins	Col	1984	An overview of Amateur Satellite working
o	Micro-Computer Aids to Satellite Tracking (Pt 2)	VK5AGR	VK5KG	30mins	Col	1984	Programs for tracking & decoding telemetery
—	Using Phase III Amateur Satellites	VK5HI	VK5KG	90mins	Col	1984	History, construction & use of high orbit satellites.
—	The Amsat Oscar Phase 3 Story	DJ4ZC	VK5KG	80mins	Col	1985	Dr. Karl Meinzer "The Father of Oscar" includes film of launch.
—	Antennas for Satellites		WIA NSW	75mins	Col	1986	Raw Unedited; from Dr Trevor Bird's 1986 VK2 Seminar
New	Amateur Satellite Service What it has to offer	VK5AGR	Gladesville ARC	190 mins	Col	1989	
New	Amsat Ground Control What is involved	VK5AGR	Gladesville ARC	130mins	Col	1989	
Space — General Interest							
—	Apollo 13 Disaster	VK5JM	VK5KG	90mins	Col	1980	Australian tracking procedure saved Apollo 13
o	SSTV Pictures from Space — Voyager		VK5KG	15mins	Col	1983	SSTV pix converted from Saturn fly past
—	Aussat — Australia's Domestic Communications Satellite	VK5JM	VK5KG	62mins	Col	1984	Technical description of services offered

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
—	Amateur Radio's Newest Frontier		ARRL	26mins	Col	1985	Amateur Radio in Space; General PR.
—	Working W5LFL in orbit from VK1ORR	Richard Elliot		23mins	Col	1986	Raw Unedited actuality footage
Miscellaneous							
—	An Auxiliary Battery Charger	VK5NX	VK5KG	30mins	Col	1981	Charging a second mobile battery
—	Lecture — Winning Foxhunts	VK5TV	VK5KG	45mins	Col	1981	How to do it from one who has!
—	Getting Started in Amateur Construction	VK5AIM	VK5KG	50mins	Col	1983	Mechanical hints for novice constructors
—	The Communications. Consequences of Nuclear War	Dr John Coulter	VK5ZBD	60mins	Col	1983	Why your gear may not survive even if you do!
—	The Far Eastern Broadcasting Company		VK5KG	60mins	Col	1984	How a Short Wave Broadcaster operates
—	The Australian "Over the Horizon Radar"	Dr Phil Whitham	VK5KG	60mins	Col	1984	How the "Australian Woodpecker" works
—	What to Expect when the RI Calls!		VK5KG	34mins	Col	1984	by Geof Carter — a Dept of Communications Field Officer
—	A Future Shock — Lecture by Roger Harrison				Col	1984	From WIA Seminar
—	Radio Comm. Act — Lecture by Colin Oliver				Col	1984	From WIA Seminar
—	Doppler Direction Finding for Foxhunters	VK2BYY	WIA NSW	43mins	Col	1985	Raw Unedited; from 75 aniv VK2 Seminar
w	Fitting BNC Connectors		OTC	7mins	Col	1985	Correct Assembly of Crimp type BNC plugs
w	Handling Static Sensitive PCBs	Paul Tardent	OTC	6mins	Col	1986	Improving reliability of Printed Ccts.
—	Extra License Grades	VK2ZTB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
—	Thick Film Modules	VK5DI	VK5KG	45mins	Col	1988	Description of modules available from VK5 WIA
—	Quartz Crystals	VK5GL	VK5GL	106min	Col	1988	Clem Tilbrook gives a "Nuts & Bolts" expert technical lecture
New	How to survive in a Dog Pile	VK2DEJ	Gladesville ARC	148 mins	Col	1989	
New	Making friends on DX	VK2SG	Gladesville ARC	28 mins	Col	1990	

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WIA News

IARU Memberships

The Ukrainian Amateur Radio League (UARL) has applied for *International Amateur Radio Union* (IARU) membership after registering with the Ukrainian Justice Ministry in September last. According to UARL President Nickolai Gostry UB5UT, the UARL is the first amateur radio organisation to be recognised in the independent Ukraine, formerly part of the now disbanded USSR.

The IARU Region 1 Executive Committee has passed the UARL's membership application as complying with the bylaws and the membership is to be considered by other IARU member societies around the world, including the Federal WIA.

Meanwhile, the *Cesky Radioklub* (CRK) and the *Slovak Amateur Radio Association* (SARA), representing the Czech and Slovak Republics, have become members of the IARU, along with the *Anguilla Amateur Radio Society,* representing Anguilla. The Federal WIA voted last year in support of all three memberships.

Arthur Milne G2MI Silent Key

Former RSGB President and well-known amateur on the international scene, Arthur Milne G2MI, died on 6 October 1993, according to a December bulletin from the *Radio Society of Great Britain.* His obituary was published in the December issue of the RSGB's journal, *Radio Communication.*

Arthur was born in 1907 in Croydon, Surrey. Licensed in 1924, he was employed with the British Post Office Telephones until his retirement in 1968. He was a member of the RSGB Council for more than 30 years. He looked after the QSL Bureau for well over 40 years, run from his home in Bromley, Kent, assisted by his wife, Lucy. Handling over one million cards a year the Post Office even gave him his own Post Code!

Arthur held many certificates and awards and was a member of the A1 Ops Club, RAOTA and the RAIBC, among many other organisations. Apart from amateur radio, he had interests in lepidoptera, church architecture, steam railway engines, trams and airships. His obituary was written by his son, Geoffrey Milne G3UMI.

DICK SMITH ELECTRONICS

YAESU

Get Your Hands On A Top-Quality Transceiver!

FT-5200 2m/70cm Mobile Transceiver

The FT-5200 carries the latest innovations in cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen, 8-level automatic display/button lighting dimmer and dual external speaker jacks. A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 watts on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring, one-touch recall CALL channels,and 6 user-selectable channel steps. Comes with hand-mic, mounting bracket and DC power lead.

Specifications:

General

Frequency range:	144-148MHz, 430-450MHz
Channel steps:	5, 10, 12.5, 15, 20 & 25kHz
Dimensions:	140 x 40 x 155mm (w/o knobs)

Receiver

Sensitivity:	Better than 0.158uV (12dB SINAD)
Maximum AF output:	3.0W into 4 ohms @ 5% THD

Transmitter

RF Output Power:	2m - 50/5W (high/low) 70cm - 35/5W (high/low)

Cat D-3310

2 Year Warranty

$1499

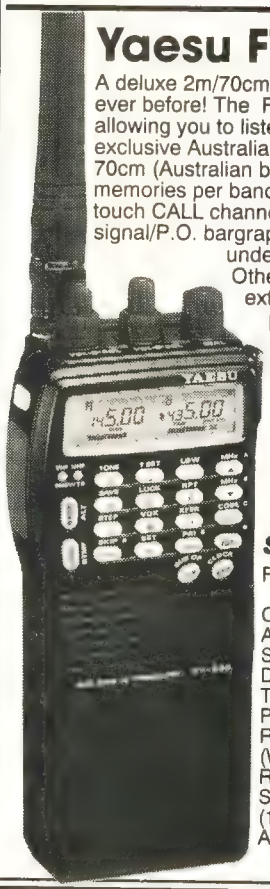
YSK-1 Remote Panel Kit

Allows remote mounting of the FT-5200 front panel. **$9995**

Cat D-3311

Yaesu FT-530 2m/70cm Hand-Held

YAESU



A deluxe 2m/70cm FM dual-band hand-held transceiver offering easier operation and more features than ever before! The FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band, or one frequency on both bands! Plus, the exclusive Australian version features full 70cm coverage (420-450MHz), Auto Repeater Shift on 2m and 70cm (Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven tuning steps and a one-touch CALL channel. The dual 5.5-digit back-lit LCD screen includes functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt dual CTCSS encode/decode, CTCSS scanning, an auto battery saver for extended battery life, a cross-band repeater facility and an inbuilt clock with alarm and snooze functions. Also provided is VOX circuitry for use with the optional YH-2 headset, a user-replaceable Lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows transceiver powering and NiCad charging, with RF output in four steps up to 5W at 12V. For enhanced battery life, an auto power-off function turns the radio off after a preset period of inactivity, so you won't return to a flat battery. The FT-530 comes complete with a high-capacity 1000mAH NiCad battery, belt clip, carry case and approved AC charger.

Cat D-3620

2-Year Warranty

$999

Specifications

Frequency range:	Transmit 144-148MHz, 420-450MHz Receive 130-174MHz, 420-500MHz, 800-950MHz
Current consumption:	
Auto power off	150uA
Standby (saver on)	16.8mA (both bands)
Dimensions:	55(W) x 163(H) x 35mm (D)
Transmitter:	
Power Output:	5, 3, 1.5, 0.5 (at 12V)
RF Power Output:	2.0W (2m)
(With 7.2V NiCad)	1.5W (70cm)
Receiver:	
Sensitivity:	2m: < 0.158uV
(12dB SINAD)	70cm: < 0.18uV
Audio Output (12V):	300mW at 8 ohms

MH-29A2B Remote Control Mic.

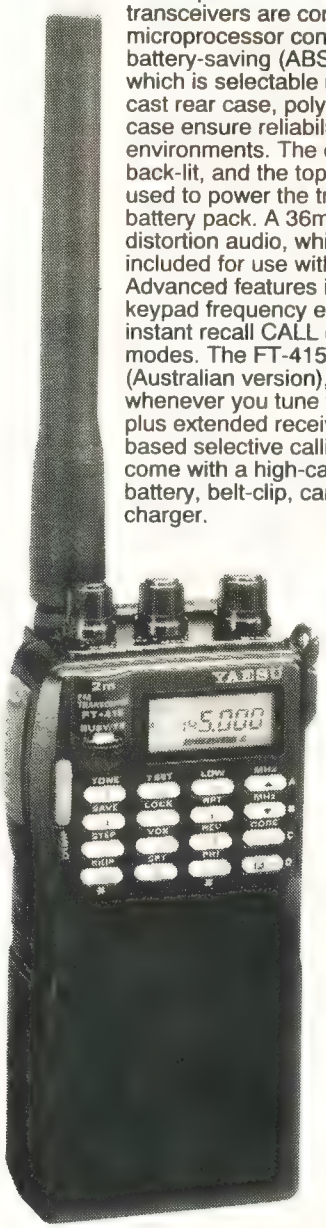
A compact speaker/microphone that provides a remote LCD screen with backlighting! Has duplicate keys for Call channel, VFO and memory selection, plus busy/Tx LED. Suits FT-530 only.

Cat D-2119

$199

Deluxe Handheld FM Transceivers

The superb FT-415 and FT-815 hand-held FM transceivers are compact and rugged with dual-microprocessor control, a range of new automatic battery-saving (ABS) features and power output which is selectable in up to 4 levels at 12V. A die-cast rear case, polycarbonate front panel and battery case ensure reliability in the most demanding of environments. The display and keypad can both be back-lit, and the top panel DC supply jack can be used to power the transceiver and charge a NiCad battery pack. A 36mm speaker provides low distortion audio, while in-built VOX circuitry is included for use with the optional YH-2 headset. Advanced features include two independent VFOs, keypad frequency entry, 41 tunable memories, instant recall CALL channel and various scanning modes. The FT-415 has Automatic Repeater Shift (Australian version), which can be activated whenever you tune to a standard repeater sub-band, plus extended receive coverage. Both have DTMF-based selective calling and paging facilities and come with a high-capacity 7.2V, 1000mA/H NiCad battery, belt-clip, carry case and approved AC charger.



Specifications:

Frequency range: FT-415
144-148 MHz
(140-174MHz
extended receive)
FT-815 430-450MHZ

Size: 55 x 146 x 33mm

Transmitter:
Power output: FT-415
2.0W (at 7.2V)
FT-815 1.5W

Both models: 5.0W at 12V

Receiver:
Sensitivity: Better than
0.158uV, (12dB SINAD),
Ham bands only.

FT-415
Cat D-3610
$599

FT-815
Cat D-3615
$699

2 Year Warranty

FT-26 2m Handheld

The easy-to-use FT-26 is an ultra-compact FM hand-held with microprocessor controls giving you more features and greater convenience. It's solidly constructed with a die-cast rear case, a high-impact polycarbonate front panel and rubber gasket seals around the controls for added protection against the elements. It has a 6-digit LCD screen and a bargraph meter for signal-strength and power output. A 36mm low distortion speaker provides clear audio, while VOX circuitry provides hands-free operation with the optional YH-2 headset. It also features 53 tunable memories, programmable band-scanning limits, priority monitoring, scan resume and an instant recall CALL channel. Plus, it offers an inbuilt battery charger circuit and Yaesu's Automatic Power-Off (APO) timer. DTMF-based selective calling and paging facilities let you select a 3-digit ID code which allows you to be paged and also page up to 5 other stations. Complete with a high-capacity 7.2V 700mA/H NiCad battery, belt-clip, carry case and approved AC charger.

Specifications:

General
Frequency range: Transmit
144-148 MHz
Receive 140-174MHz
Channel steps: 5,10, 12.5,
15, 20, 25kHz

Supply Voltage: 5.5 to 16V DC
Current Consumption- Stand-by
(with 1-sec save): 19mA

Receive: 190mA

Dimensions: 55 x 125 x 33mm
Receiver
Sensitivity
(12dB SINAD): Better than
0.158uV

Selectivity: >60dB
(adjacent channel)

Transmitter
Power Output: 2.0W at 7.2V
5.0W at 12V

Cat D-3600

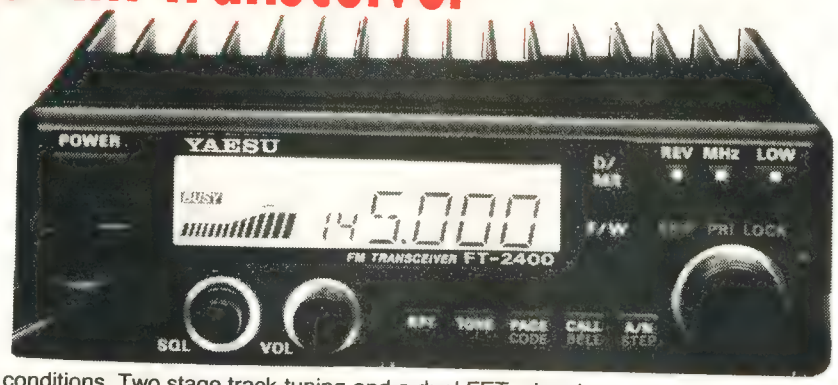
$469

2 Year Warranty

BONUS

Purchase any 2m or 70cm handheld during February, and we'll give you a 25% discount on any matching speaker/mic or NiCad battery pack purchased at the same time. Offer not applicable to dualband handhelds.

FT-2400H Rugged 2m Transceiver



The ultimate in dependability and reliability! The FT-2400H is built using high-grade mechanical and electronic construction techniques and meets the tough USA MIL-STD-810C shock and vibration requirements, so you know you're getting the highest quality. A one-piece die-cast chassis/heatsink allows three-step output of up to 50 watts without forced air cooling. Plus, fibreglass circuit boards and chip components provide professional-grade reliability. It has a large backlit LCD screen, backlit knobs and 31 tuneable memories (which can store frequency and a four-character name of your choice). A customised microprocessor also provides Auto Repeater Shift to suit Australian conditions. Two stage track-tuning and a dual FET mixer improve receiver intermod performance. Scanning functions include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channel. Seven selectable channel-steps and CTCSS encode are standard features. Comes complete with MH-26 hand mic, mobile mounting bracket and DC power lead.

Specifications

General	
Frequency range:	Transmit 144-148 MHz Receive 140-174MHz
Channel steps:	5,10, 12.5, 15, 20, 25 & 50kHz
Current Consumption:	Receive - 400mA Transmit - 12 Amp (Hi power)
Dimensions:	160 x 50 x 180mm (w/o knobs)
Receiver	
Intermediate Freq:	21.4MHz & 455kHz
Sensitivity:	Better than 0.2uV for 12dB SINAD
Image Rejection:	Better than 70dB
Maximum AF Output:	2.0 watts into 8 ohms @ 10% THD
Transmitter	
RF Output Power:	50/25/5 watts (Hi/Med/Low)

Cat D-3630 **$699** *2 Year Warranty*

With Accurate PEP Reading!
HF/6m Power/ SWR Meter

A quality wideband SWR/power meter with accurate PEP metering. Manufactured in Japan, and exclusive to Dick Smith Electronics, it's very well constructed with an all-metal case. Features include a large back-lit meter, 1.8-60MHz coverage with less than 0.1dB insertion loss, 20W, 200W, and 2kW power scales, and LED indicators for Average/PEP operation. Requires 13.8VDC at 200mA. Revex model W502 Cat D-1360 **$199**

NEW Revex W560N
HF/VHF/UHF SWR/PWR Meter ***(Not Illustrated)***
Another quality Revex wideband SWR/PWR meter, offering 2 inbuilt sensors for 1.8MHz to 525 MHz coverage! Provides measurement of 3 power levels (3w, 20w, 200w), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm. Cat D-1375 **$369**

PICK UP A BARGAIN AT THE 'GOSFORD CENTRAL COAST FIELD DAY'!

We'd like to invite you to visit our display of Communications equipment at the 'Gosford Central Coast Field Day' on Sunday, 27th February 1994. It's a great opportunity for all radio enthusiasts to see the latest Yaesu transceivers, and pick up lots of great bargains on new and ex-demo gear. See you there in our stall at the Wyong Racecourse!

PHONE, FAX & MAILORDER SERVICE & YAESU BROCHURE HOTLINE
Outside Sydney (FREE Call) 008 22 6610
Sydney and Enquiries - (02) 888 2105
Fax: (02) 805 1986 or write to
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*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

ALARA

*Robyn Gladwin VK3ENX**

Puzzle Corner

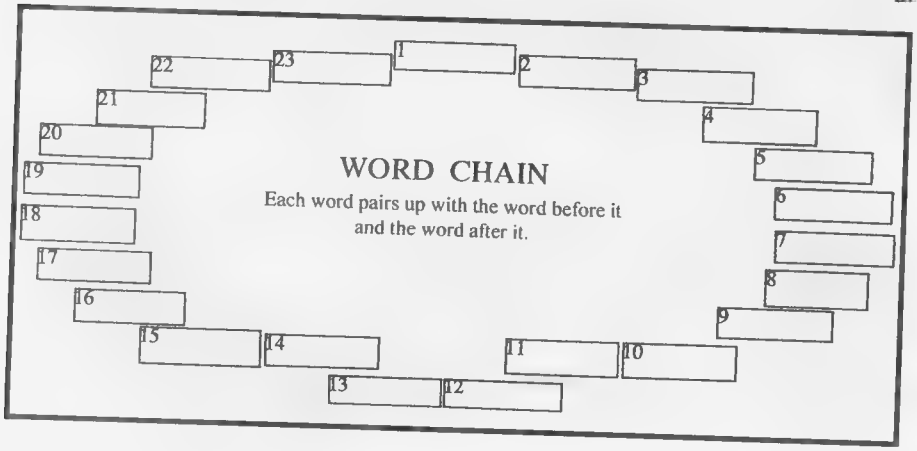
Dorothy Bishop VK2DDB, editor of the ALARA Newsletter, is always coming up with interesting items for ALARA members to ponder. Perhaps other amateurs may like to try her Word Chain.

Clues:

1. A western telegram
2. Odd wires around a ham's house
3. Person who adjusts the tone of a piano
4. Change from one track to another
5. Not the front
6. The natural agent that stimulates the sense of sight
7. A radiant smile
8. Sensory organs found in pairs on heads of insects
9. A device to make things go round and round
10. An internal combustion engine
11. Suburban pollution propagator
12. A room for a car often filled with junk
13. Used to keep children in...or out
14. The instrument used to operate a lock
15. A hollow space
16. Enough evidence to establish a fact
17. Understanding rows of words on a page
18. Spectacles
19. Lawyer Perry Mason never lost one
20. Portable sheets of paper fastened together
21. Conceal by throwing material over the top
22. A large piece of material used as an aid to escape a burning building
23. An old boiler in the laundry.

The solution to the puzzle will appear in this column next month.

*PO Box 438 Chelsea 3196



ALARAMEET

Memories of the wonderful weekend in Castlemaine still keep emerging. In the December edition of the New Zealand "WARO" Bulletin, Dawn Young ZL2AGX, reports: "Official photos were taken together with uncountable personal photos. We all started to feel we knew what it is to be film stars." Not even Dawn, the WARO President, could have realised how precious those personal photos would be. The official films were taken to be developed early in October and have never been seen again. Our thanks go to Gwen Tilson VK3DYL, for this group photo taken on the Saturday morning after the welcome by Maria McLeod VK5BMT, President of ALARA.

Silent Key

Olive Couch, an ALARA member since October 1977, passed away on 26 December 1993, after being in poor health for some time. Although not licensed, Olive, with OM David VK6WT, showed the real amateur spirit by extending friendship and hospitality over the years to many local, interstate and overseas amateurs. They also visited amateurs on their overseas trips. Olive was always interested in ALARA and members extend deepest sympathy to David and his family. David has been an AOCP lecturer for many years and taught Poppy Bradshaw VK6YF. Thank you Poppy for preparing this tribute to Olive.

WIA News

Callsign Choice for US Hams

The US Federal Communications Commission (FCC) has proposed that American amateurs will be able to get a callsign of their choosing by paying a fee. It depends on a new automated processing system being installed at the Commission's Private Radio Bureau.

Under the proposed system, says the December issue of the *ARRL Newsletter,* amateurs wishing to apply for an available callsign would be required to file a form and pay a fee. Trustees of US club and military recreation stations would also be able to apply.

AMSAT Australia

*Bill Magnusson VK3JT**

National co-ordinator
Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI
AMSAT Australia net:
Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):
Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/– 5 kHz for QRM.
AMSAT Australia newsletter and software service
The newsletter is published monthly by Graham VK5AGR. Subscription is $25 for Australia, $30 for New Zealand and $35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia
GPO Box 2141
Adelaide SA 5001

Festive Season Activity.

As usual there was a general increase in satellite activity over the festive season. AO-13 activity was curtailed a little by the eclipses and rather unfavourable sun angles. This necessitated some unusual management strategies by the control stations and will continue to do so for some time. On 27 December the following telemetry message block from AO-13's general beacon spelled out the problem:

M QST de G3RUH/VK5AGR. 1993 Dec 27. Battery performance during the recent long eclipses indicated that the charging curve set points may need adjustment. Over the next few weeks the battery is being carefully monitored to determine this. In order to maintain stable measurement conditions, the transponders remain OFF from MA 250 to MA 180.

And a few days later:

N de VK5AGR — After collecting baseline values for the Main Battery Temperature (channel no. #1E) and Battery Charge Current (channel no. #13) over the last 4 days. The battery set point has been increased from 80 to 85 on Orbit no. 4247 MA 234. The Whole Orbit Data collection in the K block has been restarted to monitor any changes in the Main Battery Temperature. Tomorrow the WOD will be restarted again to monitor the Battery Charge Current. All this is to ensure AO-13's good health. [30 Dec 93].

So please be patient. With AO-13's apogee slowly coming south we can look forward to some great conditions once the current series of eclipses is over and the controllers can return to a more favourable attitude and schedule. In the meantime "S" mode has been providing low squints and good signals for periods of up to an hour or more most days. I've heard quite a few stations claiming good results from simple antennas like helices and loop yagis. This mode should be very interesting when the eclipses are over and the attitude and mode schedule are returned to normal for this time of the year.

With an attitude of 180/0, "S" mode should be scheduled on, at or near apogee, giving large footprints and really testing one's equipment with ranges between 30,000 and 40,000 km.

As is often said by Graham and James, "Do not rely on rumours". Monitor the beacon and you will be sure you have the whole story. I'll include some information on beacon telemetry monitoring over the next couple of months. I've always found it one of the most fascinating parts of satellite operation.

Activity on the digital birds has been hectic with lots of festive season related mail, pictorial Christmas cards, etc .

End-of-Year Expedition

Our little group encountered the most unfavourable weather on record for this year's expedition to the high country. We had extreme cold, heavy rain, sleet, high winds and a 36 hour snow-fall. Despite all that, the dozen or so participants (claimed to have) had a good time. The sun did manage to shine for a couple of days and that was very pleasant. We had some reasonable results on the satellites but nothing to write home about. Unfortunately my efforts on "S" mode were frustrated by the weather on the first four or five days of the expedition when operating times were most favourable. It just wasn't possible to set up any equipment outside the tents or caravan and when the weather did improve enough to set up the tracking antennas, the "S" mode times were at un-sociable hours.

It would have been pushing my luck to start the generator in the pre-dawn hours with the rest of the camp asleep. And with the weather the way it was I didn't really feel like it anyway. Ah well, maybe next year! We had quite good results in other ways. Ray VK3YPY managed to have several 1296 MHz contacts back to Melbourne and Geelong and 6 metres provided some good DX as did 70 cm and 2 metres. The Ross Hull contesters were out in force as usual and many numbers were exchanged.

New Satellites in Orbit

Last year was quite an exciting one for amateur radio satellite activity, in particular new launches. 26 September saw the launch of four new micro satellites with amateur radio capability. Of these, three have already been put into amateur service. The fourth, POSAT, has been commissioned into its commercial service and we are awaiting news of activation of the amateur radio package. As promised last month, here are details to hand of the three so far available for the amateur user. Some details are still a little sketchy.

KITSAT-B now KITSAT-OSCAR-25 (KO-25).

A 50 kg satellite similar to the UoSats and built by the Korean Advanced Institute of Science and Technology (KAIST). Or is that the Korean Advanced Institute of Space Technology? I saw the latter title recently in a publication from Amsat-NA. Whichever it is, the satellite was built entirely by a Korean team who trained at Surrey and in fact built KO-23 under the supervision of the Surrey team. KO-25, however, is a totally Korean effort and completes the educational technology transfer from Surrey to Korea. Its purpose, to take CCD images, to process numerical information, measure radiation and to receive, store and forward digital messages.

KO-25 uses uplink frequencies of 145.87 and 145.98 MHz and downlink frequencies of 435.175 and 436.5 MHz. The 9600 baud store and forward operation is similar to KO-23 and uses the now (almost) standard PB/PG software. KO-25's downlink power can be varied from 2 to 5 watts.

ITALY-AMSAT-A now ITAMSAT-OSCAR-26 (IO-26).

This Italian amateur radio satellite will offer both 1200 baud PSK and 9600 baud G3RUH compatible modes. It contains a five channel VHF receiver and two UHF transmitters. User frequencies are as follows. Uplink, 145.875, 145.9, 145.925 and 145.95 MHz. Its downlink frequencies

are 435.87 MHz (Primary) and 435.82 MHz (Secondary). Built on a micro-sat bus, the satellite is a 25 cm cube weighing 10 kg. The transmitter output is variable up to 4 watts.

The UHF antenna is a 4 element canted turnstile, ie 4 monopoles set at about 45 degrees to the main structure and fed via a phasing harness. The VHF antenna is a whip. Ground stations currently equipped to work the PSK micro-sats (AO-16 and LO-19) and the 9600 baud UoSats (UO-22 and KO-23/25) are already setup to use IO-26. Once again the PB/PG software will work.

EYESAT containing AMRAD-OSCAR-27 (AO-27).

This commercial satellite was put together by Interferometrics (USA). It carries an amateur radio payload on behalf of AMRAD (Amateur Radio Research and Development, a technically oriented club in the Washington DC area). It will be capable of 1200 baud AFSK and up to 9600 baud FSK and will also have an analog FM transponder. User frequencies are 145.85 MHz uplink and 436.8 MHz downlink. It is primarily an experimental platform for new modulation types and protocols and is not planned at present for routine communications service.

The hardware necessary for the 1200 baud AFSK link will simply be any standard TNC that has KISS mode. The usual G3RUH type modems will be able to use its 9600 baud FSK mode. Ground station software has yet to be developed but will NOT be the standard Pacsat PB/PG program.

Next month

From time to time I receive queries like "What do I need to work the Oscars?" A virtually impossible question to answer in a few minutes. Most of these questions come via telephone and in many cases the newcomer doesn't even own a computer. I usually manage to sort things out by sending off some reading material (or a disk) and referring them to various publications containing the basic information.

I've received a number of queries lately from more advanced users, questions like "How do I work the digital birds?" So next month I'll take readers through a typical UO-22/KO-23 digital store and forward ground station. A word of warning though. There isn't any easy way to work these birds. You need to gird up your loins and give it your best shot. More next month.

*359 Williamstown Rd, Yarraville VIC 3013
Packet. VK3JT@VK3BBS

ar

WIA News

US and VK Amateurs to Head IARU

Prominent US amateur Richard L Baldwin W1RU, has been nominated for re-election to the presidency of the *International Amateur Radio Union* for a period of five years, commencing May 9, 1994.

Richard Baldwin has previously served as IARU Secretary, from 1976 to 1982, while employed as General Manager of the *American Radio Relay League* (ARRL). He retired from the ARRL in 1982 and since then has devoted much of his time to the IARU as a volunteer, travelling to ITU and IARU conferences and teaching training courses in Amateur Radio Administration to telecommunications administrators in more than 50 countries.

Well-known Australian amateur Michael Owen VK3KI, has been nominated for re-election as Vice-President, also for a five-year-term. Michael Owen has been involved in IARU affairs for 25 years. He was Federal President of the WIA for four years in the 1970s and a member of the Australian delegation to WARC 79. He served as Director of IARU Region 3 from its inception. He has lived in London for several years, where the Australian law firm in which he is a partner established an office, but is now in the process of returning to Melbourne.

The next IARU Region 3 Conference is to be held in Singapore in early September. WIA Federal has plans and papers under way for Australian representatives to attend.

Telecom Freecall

Just to clarify the item on the possibility of Divisions using Telecom's Freecall 1-800 service, this now replaces the old 008 Freecall service. All previous Freecall 008 customers now move to the 1-800 prefix, the last six digits remaining the same. Both 008 and 1-800 Freecall calls will be "double trunked" by Telecom for at least two years until customers change their listings in directories, advertising, letterheads etc.

The 1-800 service can be limited, at the customers" request, to receive calls only from the customer's state. This is known as "Statewide Freecall", which is what the NSW Division has chosen for its 1-800 number (1800 817 644). Callers outside the Sydney metropolitan area can use this number to make free calls to the Division's office at Amateur Radio House in Parramatta.

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of December 1993.

L20961 MR M BULMER
L30873 MR F KOSTER
L30874 MR F JEFFERY
L30875 MR L J PADLEY
L40331 MR E G SUMMONS
L40332 MR K M BYRNE
SM4AIQ D A G LARSSON
VK1MGT MR G F TRAYNOR
VK2APW MR P R WATSON
VK2DX MR J L JONES
VK2JXI MR M HART
VK2WRJ MR R A WALKER
VK3BXX MR S ADLER
VK3GRW MR G WAINWRIGHT
VK3ITI MR P J RAFFERTY
VK3JUM MR B G APLIN
VK3LDS MR D SPEEDIE
VK3PHS MR R B SMITH
VK3TCA MR C APPLEBY
VK3TYN MR R F BALLANTYNE
VK4ALK MR B B SMEATON
VK4CMS MR M D'ATH
VK4FX MR M W THORLEY
VK4GNN MR G N NIELSEN
VK4LJT MR J E TUCKER
VK4WSS SOUTHSIDE ARS
VK4ZAS MR F A SMITH
VK4ZTF MR T F ARMSTRONG
VK5ADX MR O SZEMIS
VK5CJC MR J T BUGNO
VK5NLK MR R L KING
VK6APZ MR P ZWARECZ
VK6VM MR E C MACHIN
VK6WOG MR P G FERGUSON
VK6ZAK MR N B SANDERS
VK7AM MR A E WILLIAMS
VK7LJS MR J SERINO

BEAT THE SUN SPOTS

For the next few years, you can amost forget DX-ing on 10 & 15 metre bands. Tremendous deterioration of DX-ing will also occur on 20 metre band. So what is the answer? There is only one and only one answer! THE NEW FOUR BAND (7-14-21-28 MHz) BEAM ANTENNAS from TET-EMTRON the INNOVATORS in HF antenna systems, TET-EMTRON IS AN AUSTRALIAN PRODUCT!

TET-Emtron ANTENNA SYSTEMS

DESIGNED AND MADE IN
AUSTRALIA

ED-52C ALL BAND WIRE TRAP ANTENNA

* Completely factory assembled ready to use
* Heavy 14 (7/22) gauge standard copper antenna wire to survive those severe storms
* Centre fed tuned feedline supplied.
* Only two traps
* Includes centre insulator with an eye hook for centre support
* Includes custom in sulators molded of top quality material with high dielectric qualities and excellent weatherability
* Overall length 33 mtrs less when erected as an inverted vee or sloper
* Handles 2 kw PEP & covers 80 through 10 metres **$179**

WORLD'S LARGEST SELECTION OF HF-BEAM ANTENNAS

TE-3 BAND SERIES		**TE-4 BAND SERIES**	
TE-23 2 element 3 band 14/21/28	$414.00	TE-34 3element 14/21/28 1 element ZMhz	$695.00
TE-23M 2 element 3 band mini 14/21/28	$440.00	TE-44 4 ELEMENT 14/21/28 1 ELEMENT ZMHZ	$870.00
TE-33 3 element 3 band 14/2/28	$575.00	TE-433HB 3 element 14/21/28 2 element ZHmz	$850.00
TE-43 4 element 3 band 14/21/28	$750.00	TE-443HB 4 element 14/21/28 3 element ZMhz	$1100.00
HB-35C 5 element trapless 14/21/28	$990.00	**TE-6 BAND SERIES**	
TE-7 BAND SERIES		TE-26 1 elem 14/21/28 1 elem 10/18/25	$380.00
TE-47 3 elem 14/2/28 1 elem 10/18/25 1 elem 7MHz	$995.00	TE-46 3 elem 14/21/28 1 elem 10/18/25	$750.00
TE-57 3 elem 14/21/28 2 elem 10/18/25 1 elen 7MHz	$1200.00	TE-56 3 elem 14/21/28 2 elem 10/18/25	$1075.00

TET-EMTRON VERTICAL ANTENNAS
EV-3, 14-21-28 MHz, $149
EV-3W, ALL WARC BANDS, $189
NEW EV-5, 3.5-7-14-21-28 MHz
UNIQUE NEW ANTENNA - $299

ROTATORS GALORE

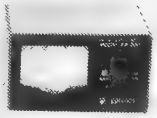
Grab your Kenpro Rotator before the price hike! Unstable Dollar will force increases in the near future!

KR 400
KR 400RC
KR 1000
KR 5400B
Dual Azmith/Elevation
STay Bearings & Rotator Cable in stock

ANTENNA ROTATOR PACKAGES - ONLY UNTIL 31/11/93

	RRP	SPECIAL
KR-400 + TE-33	$1,175.00	$1,100.00
KR-400RC + TE-33	$1,250.00	$1,175.00
KR400 + TE-23M	$1,100.00	$1,025.00
KR1000 + TE-HB-35C	$2,135.00	$1,950.00

EMTRON'S PRECISION CROSS NEEDLE RF EP2000 SWR METER



$149

Yes the new from EMTRON - highly accurate CROSS-NEEDLE SWR & POWER metre, model EP-200 with a freq range from 1.8 MHz to 60 MHz and power rangers 20 200 watts, gives instantaneous readings of forward/reverse power and SWR plus 2 KW.

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*Replaces centre insulator
*Puts power in antenna
*Broadbanded 3 40MHz
*Small,lightweight &weatherproof
*1 1 impedance ratio or 4 1
*For legal power and more
*Helps eliminate TV
*With SO 239 connector
*Built in DC ground helpsprotect against lightning

Only $59

ANTENNA CENTRE INSULATOR

*Small,rugged,lightweight,weatherproof
*Replaces centre insulator
*Handles full legal power and more
*With SO 239 connector

$20

COAXIAL SWITCHES	DATONG:	EMTRON:
CX201 - $45	D70 Morse Tutor	ETP-1 RX ATU-PREAMP
CX201N - $69	RFA Broad Bond Rx preamp	EAT-1000 ANT, TUNER
CD401 - $99	ANF Auto Notch R x Filter	COLLINS 1:1 LIL BALUN
CX401N - $120	VLF Converter	

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Fax: (09) 472 3795

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Pottinger Business Services
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Fax:4-567 1842 (request)

Club Corner

Western Australian HamFest 1993

The Northern Corridor Radio Group are very pleased to report that the Western Australian HamFest 1993 was a resounding success, with the largest attendance in its 5-year history.

Over 600 people attended HamFest, the premier amateur radio, CB and electronics show in WA, on Sunday 4 November. This year, HamFest was held for the first time in a covered venue in Perth and visitors and traders alike were pleased with the pleasant, cool environment.

Local traders were well represented by Tower Communications, Terlin Aerials, Upsonic and Halk Air, with large stands showing their latest products. Stands and demonstrations were put on by the WA Amateur Digital Communications Association (WAADCA), the Vintage Radio Association of WA, the Australian CW Operator's QRP Club, the VK6WT Morse Key Collection and the NCRG, including its popular "Bring and Buy" stall.

On show at the NCRG stand, alongside a packet radio demonstration by VK6BDJ and a collection of homebrewed 10 and 24 GHz microwave equipment, was a complete ATV repeater, VK6RTX, for 625-line AM transmissions on 444 MHz. Some of the monies raised at HamFest will be used for the commissioning and installation of VK6RTX during early 1994.

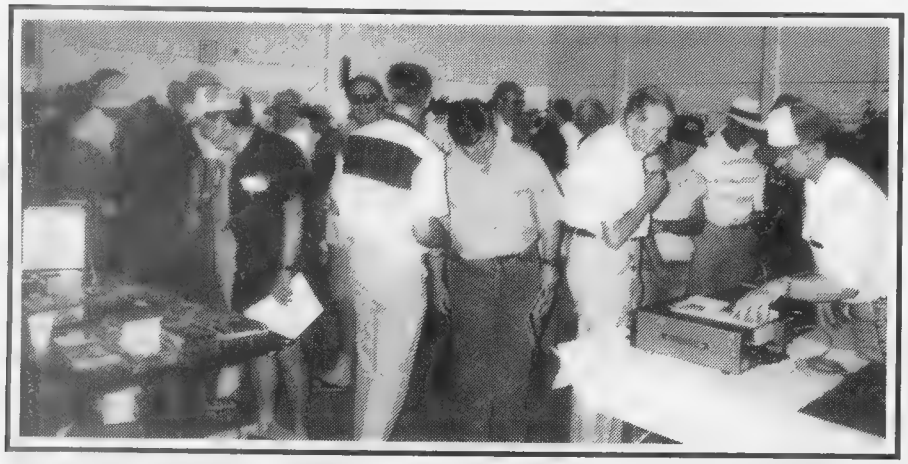
In addition to the activities inside the Len Hansman Hall, the Car Boot Sale attracted a record number of small traders, with almost all available space being sold and regular attendees full of praise for the sometimes frantic attention of visitors.

A very special thanks must go to Kenwood Australia/Tower Communications, Terlin Aerials, and Upsonic and Halk Air for providing the wonderful prizes for the HamFest Grand Raffle. Carl VK6XW was rapt to win the latest Kenwood TH28A dual-band 2 m/70 cm handheld, donated by Kenwood Australia and Tower Communications, while Keith, VK6XH ecstatically carried off the fabulous Terlin Outbacker 80-10 m helical whip, made here in WA and donated by Terry Terlin and Terlin Aerials.

Similarly, you could not keep the smiles off the faces of Fred VK6FRE, and Bill VK6WJH, who won the Upsonic computer uninterruptible power supply (UPS) and the Halk Air 6 m HB9CV yagi antenna, respectively, donated by Upsonic and Halk Air.

The competition for the Hamfest Homebrew Competition was even keener than usual, with some visitors to the show even rushing home to bring back their latest creations and enter them. The winner was Phil VK6YBV, with his incredible 2 m "QRP-Killer", a linear amplifier using a single 4CX250B and capable of the legal limit for SSB. In a contest of very high standards indeed, VK6YBV scored very highly with the judges, with even the amplifier's silver plating being "homebrew".
A worthy runner up was Wayne VK6BDP, with a 12 V 12 A regulated power supply. Peter Parker VK6BWI, took out the third prize with a 80-20 m T-match ATU, made entirely from the junk box and a piece of kitchenware!

Thanks to all who attended HamFest — from all over WA and farther afield — and to the members of the NCRG and their families who worked tirelessly behind the scenes. See you all next time!



Western Australian HamFest 1993 inside the Len Hansman Community Centre.

ANARS Activates MV "Spirit of Tasmania"

In another first, the Australian Naval Amateur Radio Society was able to conduct operations from the Radio Room of Australia's latest passenger ship, the mv "Spirit of Tasmania", whilst the ship was alongside at Devonport, Tasmania. The ANARS chairperson Glenn Dunstan VK1XX/MM was able to spend the afternoon of Monday 22 November 1993 working 40 and 20 metres giving many Australian and New Zealand amateurs a unique and rare opportunity to contact the actual vessel.

The Society held a very successful stand at this year's Gold Coast Hamfest with many former seafarers making themselves known to the ANARS representatives present. Our thanks to the Gold Coast ARS Inc for organising a superb hamfest.

The ANARS, which was launched on 9 August 1993, is pleased to announce that the "HMAS Canberra Memorial Award" is now available to all radio amateurs and shortwave listeners. The attractive certificate measures 300 mm by 250 mm, is printed in two colours and features a photograph of the original HMAS Canberra which was lost at the Battle of Savo Island on 9 August 1942. Award rules are as follows:

1. The award shall be available to ALL radio amateurs and shall also be available to ALL shortwave listeners on a heard basis.
2a. Australian claimants shall be required to score fifty points to qualify for the award.
2b. Overseas claimants shall be required to score fifteen points to qualify for the award.
3. Contacts made after the official launch of the ANARS on 9 August 1993 (51st Anniversary of the loss of HMAS Canberra) are valid towards the award.
4. Points shall be scored on the basis of one point per ANARS member per band per mode for two-way contacts, including those via terrestrial VHF or UHF repeaters. Packet contacts do NOT count towards this award.
5. ANARS members located in Canberra or the ACT shall count double points. This includes any VK1 operating portable outside the ACT.
6. All ANARS Club or Special Event stations with "AX.00x" numbers shall count double points.
7. Any ANARS member operating maritime mobile shall also count double points.

8. The Headquarters station of ANARS, VK1SEA/VK1VHP shall count double-double (4) points per band per mode.
9. The award custodian shall be Barry Bennetts VK2BBE, 6 Gibingbell Close, Ocean Shores, NSW 2483.
10. The decision of the award custodian shall be final in all matters concerning the issuing of the awards.
11. A log extract countersigned by two other amateurs shall accompany all award claims. No QSL cards need be sent.

12a. A fee of $AUS5.00 shall be charged for all Australian claims (cheques/money orders payable to ANARS).

12b. Overseas claimants to include six International Reply Coupons (IRCs).

Membership of the ANARS continues to grow and is well past 100. Any amateurs or interested shortwave listeners who have professional naval or maritime backgrounds are invited to join Australia's Own naval amateur radio society. Further information on the ANARS can be obtained by checking into the Australian Naval Net on 3620 kHz from 0930 UTC every Wednesday, or by packet from the ANARS station VK1SEA @ VK1KCM. Or by contacting the Hon secretary Terry Clark VK2ALG, QTHR in the 1994 Call Book, or by telephone on (060) 253 293, or fax on (060) 257 715.

Summerland Amateur Radio Club

All computer and electronic buffs please note that the Summerland Amateur Radio Club is putting together a show of the latest in computers and electronics.

More than 20 commercial displays have been organised. Communications gear will also be demonstrated.

An amateur radio station will be functional on HF, VHF and on packet radio. Bring and Buy (or swap) stalls will be set up. Food and refreshments will be on sale.

This event will take place on Saturday, 26 February 1994 from 9.30 am until 4.30 pm in the Churchill Auditorium of the Lismore City Hall.

Further information from Peter VK2FSD on 066 252 334, Ric VK2EJV on 066 895 137, Graeme VK2GJ on 066 851 336, or check out a local BBS via VK2RPL-2 668900.

Graeme VK2GJ,
Publicity Officer

Goulburn Amateur Society

From David Thompson VK2BDT, on behalf of the Goulburn Amateur Society, we have received a thumbnail biography of one their leading members Jim Andrews VK2BO. Jim has been a member since the Society was formed in the 1950s, and is a very keen participant each year in the RD Contest. VK2BO has many times been "top of the list" in the VK2 results. He is also a notable rifle-shooter. The *"Goulburn Post"* gave him the whole front page of its sporting section on 11 November 1993.

Moorabbin & District Radio Club Inc.

Club Natter Nights will resume on Friday, 4 February and General Meetings on Friday, 18 February.

Tuesday "Hobby and Trouble Shooting" nights will also start up again this month. The ever popular Tuesday morning coffee meeting started up again on 18 January.

The club provides an approved examination service for all grades of licence. Enquiries about this service should be directed to Jerry Viscaal VK3MQ phone (03) 7046355.

The Club "Net and Award" night over club station VK3APC will resume on Monday, 7 February. The M & DRC Hamfest on 14 May will be bigger and better than ever and will now include a home brew section for several categories and with valuable prizes. This will be open to all comers so we invite you to be in it.

Visitors to any club meetings are always assured of a warm welcome.

The Club has made a donation of $100.00 to the Lord Mayor of Sydney's Bushfire Relief Fund.

Allan Doble VK3AMD

Radio Amateurs Old Timers Club

Club broadcasts and call backs will resume on Monday, 7 February and the following one will be on Monday, 7 March. Both of these series of broadcasts will be based on Melbourne daylight saving time, ie:-

2 metres, 40 metres and 80 metres	10.00 am
20 metres beaming North	11.00 am
20 metres beaming West	12.00 noon
80 metres	8.30 pm

We have some very interesting material prepared for the February broadcast so make a note to listen to whichever of our six transmissions is most convenient at your QTH.

RAOTC QSO Parties

The first QSO Party this year will be held on Monday, 7 March between the hours of 0300 and 0500 UTC. Preferred frequencies are CW 14.050 MHz and USB 14.120 MHz.

Allan Doble VK3AMD

AWARDS

*John Kelleher VK3DP — Federal Awards Manager**

GCR List

An explanation. Many countries, including Australia, rely on an Awards verification system commonly known as a GCR or General Confirmation Rules list. Basically it is a list of qualifications for an award, in the order required by that particular country.

Some countries require that you send QSL cards, or photocopies, along with your list, but the majority only require a list certified by two other amateurs or a member at national level. The latter system is now generally used, so that when applying for an award, our list of qualifiers now becomes a general confirmation list, according to the rules of the country involved.

DXCC Listings

As mentioned in the January issue of Amateur Radio, an abbreviated listing for WIA DXCC would be published. This shortening of these listings is indeed a sad state of affairs caused by members who have:

(a) Not added to their achievements since December 1987; or

(b) Allowed their numbers to fall below the required 100 countries, per deletions, etc. Here, now, are the WIA DXCC listings current as at 13 January 1994.

WIA DXCC STANDINGS
PHONE
Honour Roll

CALLSIGN	COUNTRIES
VK3QI	328/339
VK3DYL	328/331
VK4KS	327/371
VK4LC	327/371
VK5WO	327/362
VK6LK	327/349
VK4RF	327/344
VK6HD	327/342
VK3AKK	326/336
VK5QW	326/329

VK4OH	325/329
VK1ZL	324/327
VK5MS	321/373
VK6RU	320/373
VK5XN	320/338
VK5EE	319/322
VK6NE	318/332
VK2FGI	317/320
VK3OT	316/327
VK3YJ	316/320
VK3CSR	314/320

General Listing

VK3AMK	313/329
VK6AJW	312/317
VK3RF	304/311
VK5WV	303/322
VK3AWY	303/310
VK3WJ	303/308
VK7BC	301/309
VK3JI	292/304
VK2WU	292/296
VK6PY	291/295
VK2AKP	289/294
VK2DTH	287/289
VK6VS	286/288
VK2APK	285/313
VK6RO	285/289
VK4BG	284/299
VK3CYL	283/290
VK4DP	282/292
VK3DU	282/290
VK5OU	281/286
VK3VU	272/275
VK4OD	270/272
VK3GI	261/264
ZS6IR	259/262
VK3VQ	256/272
VK2SG	253/274
VK2AVZ	251/257
VK4QO	251/255
VK2PU	238/240
VK6YF	237/240
PS7AB	235/237
VK3DP	234/237
VK3DS	226/336
VK2ETM	226/227
VK2BCH	223/226
VK2CKW	223/225
VK5IE	219/221

VK5BO	218/222
VK1PS	211/212
VK3DD	201/204
ON6DP	201/202
VK4KRP	199/201
VK2VFT	198/201
VK6BQN	186/190
VK3CIM	179/182
KA1TFU	176/178
VK2BQS	162/165
VK3DVT	159/161
VK4BAY	154/156
7J1AAL	149/150
VK4DMP	147/148
VK4ICU	143/145
VK3DNC	141/142
VK6LC	139/140
VK4VJ	135/137
VK6LG	135/135
VK2SPS	130/132
VK2NO	128/
LU5EWO	125/
SM6PRX	124/126
VK7YP	122/124
VK4LV	115/117
VK7WD	115/116
VK3BRZ	114/116
VK4CY	112/
VK4NJQ	111/115
VK4ARB	110/111
VK5AGM	105/107
VK4AU	105/
N4JED	104/105
VK2EQ	104/
VK3EHP	103/105
VK4BJE	102/104
VK3YH	102/103
VK5ZH	100/104
VK2CMV	100/102
VK3TI	099/101
VK4KGE	099/101

WIA DXCC STANDINGS
CW
Honour Roll

CALLSIGN	COUNTRIES
VK3QI	326/335
VK6HD	322/341

General Listing

VK2QL	312/359
VK3XB	311/343
VK4RF	305/330
VK3YL	302/340
VK3KS	297/322
VK5WO	282/295
VK2APK	274/304
VK6RU	273/317
VK3AKK	268/272
VK3JI	257/280
VK3DP	221/224
VK4DA	217/219
VK7BC	210/219
VK2CWS	210/212
VK4LV	200/207
VK4DP	199/210
VK4OD	179/182
VK6PY	178/181
VK3CIM	173/174
VK5BO	159/184
VK3DNC	154/157
VK6MK	147/149
EA6AAK	138/
VK7DQ	137/138
VK2SG	136/148
VK4KS	126/134
VK6BHW	124/126
VK2TB	123/125
VK3AGW	119/120
VK2AKP	115/117
VK5QJ	107/109
VK4CY	100/

WIA DXCC STANDINGS
OPEN
Honour Roll

CALLSIGN	COUNTRIES
VK3QI	328/340
VK3YL	327/372
VK4KS	327/371
VK5WO	327/365
VK4RF	327/360
VK6HD	327/349
VK3AKK	327/337
VK5QW	325/328
VK6RU	320/373
VK3OT	319/330
VK3JA	317/363

General Listing

VK3AMK	313/329
VK7BC	311/318
VK3JI	307/333
WA3HUP	306/330
VK3XB	301/340
VK4DP	295/307
VK3DP	293/296
VK2APK	292/328
VK6PY	292/298
VK4BG	291/309
VK2SG	289/314
VK2AKP	289/294
VK6RO	288/290
VK3CYL	283/290
VK4OD	280/282
VK3VQ	271/287
VK5BO	264/301
VK2ETM	239/240
VK3CIM	224/225
VK4DA	218/220
VK2CWS	214/216
VK4LV	212/219
VK2VFT	202/205
VK4CY	200/212
VK3DNC	185/187
VK2BQS	176/179
PR7CPK	174/175
VK4ICU	159/161
VK6NV	154/156
VK6MK	152/154
VK6LC	142/144
VK4NJQ	133/139
VK4CHB	129/131
VK2CXC	128/130
VK4EZ	122/131
VK5BWW	111/112
VE7BS	106/107
VE7BS	106/107
VK3COR	102/104
VK7TS	101/102
SM7WF	101/
VK7DS	099/102

WIA DXCC STANDINGS
RTTY
General Listing

CALLSIGN	COUNTRIES
VK3EBP	168/170
VK2SG	157/160
VK2BQS	115/117

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WIA News

ALARA History

Much time and effort has been contributed by a number of ALARA members in compiling the history of the Australian Ladies Amateur Radio Association.

It is good to see such matters being recorded and preserved. Congratulations to Marilyn Syme VK3DMS and her sources of information.

Contests

*P Nesbit VK3APN — Federal Contest Coordinator**

Contest Calendar Feb-Apr 94		
Feb 12/13	PACC CW/SSB DX Contest	(1/94)
Feb 12/13	Spanish RTTY Contest	(1/94)
Feb 19/20	ARRL DX CW Contest	(1/94)
Feb 25/27	CQ WW 160 m SSB Contest	(12/93)
Feb 26/27	RSGB 7 MHz CW Contest	(1/94)
Feb 26/27	UBA (Belgium) CW DX Contest	(1/94)
Mar 5/6	ARRL DX SSB Contest	(1/94)
Mar 12/13	BERU CW Contest	
Mar 19/20	WIA John Moyle Field Day	
Mar 19/20	BARTG RTTY Contest	
Mar 26/27	CQ WPX SSB Contest	
Apr 1	Poisson d'Avril Contest	
Apr 2/3	SP DX Contest	
Apr 9/10	JA DX CW Contest (High Bands)	
Apr 9/10	Israel DX Contest	
Apr 23/24	Helvetia DX Contest (Switzerland)	

RD Contest Revisited

Judging from enquires received recently, interest in the RD Contest runs high, particularly in the method used to determine the winning Division. Therefore, this month I decided to spend a few minutes explaining how the system works. To determine the winning Division, the following statistics are collected for each Division: (a) the total number of logs submitted for all sections of the contest; (b) the total number of points from those logs; (c) the total number of licensees at the time of the contest (contact your Federal Councillor); (d) the weighting factors (WF) for the preceding 3 years of the contest. The following calculations are then performed for each Division:

Raw Score = Total Points x No. of Logs ÷ No. of Licences

Raw WF = Highest Raw Score (all Divisions) ÷ Raw Score (this Division)

WF (this year) = [Raw WF + WF (last year) + WF (year — 2) + WF (year — 3)] ÷ 4

Final Score = Raw Score x WF (this year)

I can assure you the calculations are simpler than they might initially appear, and are easily programmed into a spreadsheet. If anyone is interested I would be happy to send them a copy of a spreadsheet in Quattro/Pro, Lotus or Excel format (please specify), which contains the equations and data for the 1993 RD Contest, upon receipt of a disk and stamp for return postage. This program will calculate the final score for all Divisions given the raw input data for any year, and contains a macro to sort the Divisions into winning order.

Why is such an elaborate scoring system used? The reason is to attempt to provide the fairest possible competition between Divisions, and also to encourage less active amateurs to join the contest. This scoring system has evolved over many years, and probably represents the best system to date, although it is not perfect. For instance, after the last RD Contest rumours were circulating that some members of one Division had agreed, prior to the contest, not to work members of another Division which had been identified as a significant threat. Now these sorts of things are heard after nearly every RD Contest and, considering that the rules have traditionally emphasised competition between the Divisions, one should not be too immediately judgemental. After all, strategies designed to maximise the chances of one's own team winning exist in virtually every team endeavour ranging from football, through motor sport, to business. Why should the RD Contest be any different, where the Divisions represent teams?

This would be OK if entrants were all on the same footing. However, such is not the case with the RD. In practice many possess modest stations, have no wish to become contest diehards, and take part simply to help others out with a few numbers and maybe get a reasonable score themselves. In particular, some are enjoying their first ever contest. I doubt that they would enjoy being forced to choose between forsaking hard earned QSOs, or breaking ranks and risk being ostracised by other members of their Division. Furthermore, members of the Division which is being "boycotted" would not be terribly pleased at having their calls ignored and, in particular, the newcomers (being unaware of these behind-the-scenes machinations) may well decide that contesting is not for them, and make this their first and last RD. And who could blame them for that?

More attention certainly needs to be drawn to the efforts of individual entrants in the RD, and astute readers will have noticed that certificate winners are once again being highlighted in the results. Perhaps we should consider re-introducing the old scoring system which allocated QSO points according to difficulty. Although not perfect, I recall thinking at the time what a good idea it was. What are your views on this, or any other aspect of the contest? The RD is the first contest which most VKs enter and, for this at least, it deserves our full support. I believe there are many readers with good ideas to contribute; please write, call or whatever! We'd love to hear from you!

Attention Contest Managers!

I wish to thank all the contest managers who have been forwarding rules and results on disk, as it makes my life so much easier. As I now have soft copies of all the VK contests, there is no further need to send rules on disk and from now on I would prefer to receive rules photocopied from the previous year's AR, with changes marked up (except for radical rule changes of course). This will eliminate the risk of errors, and ensure that minor editing changes (as necessary) are retained. On the other hand, disk copies of results are always appreciated, at least for the larger contests for which retyping and checking are extremely time consuming. A return stamp will secure the return of the disk.

Thanks To...

Phil VK1PJ for handling the John Moyle Field Day Contest, Sid VK2DID for forwarding information on a forthcoming DX contest, and also *CQ, QST,* and *Radio Communications.* Until next month, good contesting! **73,**

Peter VK3APN

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Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April 1993 AR.

Commonwealth Contest (BERU)

CW only: 1200z Sat to 1200z Sun, March 12-13

This annual event is always very popular in this part of the world. It runs each year on the second full weekend in March, and its purpose is to promote contacts between stations in the British Commonwealth and Mandated Territories. Categories are single operator, single and multiband; and receiving. The use of spotting nets, packet clusters, etc. is precluded. Contacts may be made with any station using a British Commonwealth prefix, except those within the entrant's own call area. Bands are 80-10 m, using the bottom 30 kHz of each band, except when contacting novice stations above 21030 and 28030 kHz.

Exchange RST and serial number commencing with 001. Score 5 points per QSO, with a bonus of 20 points for each of the first 3 QSOs with each Commonwealth call area on each band (note that for the purpose of this contest, the entire UK area counts as one call area).

Several "headquarters" stations will be active during the contest, and will send "HQ" after their serial number to identify themselves. Each HQ station counts as an additional call area and therefore attracts the 20 point bonus. Entrants may contact their own HQ station for points and bonuses.

Show duplicate contacts in the log with zero points. Entrants making more than 80 QSOs should include an alphabetical checklist of the callsigns appearing in the log, together with either the serial number sent or the time of contact beside the callsign. Separate logs and lists of bonuses claimed are required for each band (new requirement). Include a cover sheet showing standard details, and send the log to arrive by April 17th to: RSGB HF Contests Committee, c/o S. Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR7 7AF, England. Airmail is advised, as late logs may be treated as check logs. The Senior and Junior Rose Bowls will be awarded to the overall leader and runner-up respectively, and Certificates of Merit to the leading stations in each category and call area on each band.

The following call areas are recognised for the purpose of scoring in the 1994 Commonwealth Contest:
A2, A3, AP, C2, C5, C6, CY9, CY0, G/GB/GD/GI/GJ/GM/GU/GW (all one area), H4, J3, J6, J7, J8, P2, S2, S7, T2, T30, T31, T32, T33, V2, V3, V4, V5, V8, VE1, VE2, VE3, VE4, VE5, VE6, VE7, VE8, VK1, VK2, VK3, VK4, VK5, VK6, VK7, VK8, VK9C, VK9L, VK9M, VK9N, VK9W, VK9X, VK0 (Heard Isl), VK0 (Macquarie Isl), VK0 (Antarctica), VO1, VO2, VP2E, VP2M, VP2V, VP5, VP8 (Falkland Isl), VP8 (S Georgia), VP8 (S Sandwich Isl), VP8 (S Shetland Isl), VP8 (S Orkney Isl), VP8 (Antarctica), VP9, VQ9, VR6, VS6/VR2 (Hong Kong), VU, VU4 (Andaman & Nicobar Isl), VU7, VY1, YJ, Z2, ZB2, ZC4, ZD7, ZD8, ZD9, ZF, ZK1 (N Cook Isl), ZK1 (S Cook Isl), ZK2, ZK3, ZL0 or /ZL (NZ reciprocal calls), ZL1, ZL2, ZL3, ZL4, ZL5, ZL7, ZL8, ZL9, 3B6/7, 3B8, 3B9, 3DA, 4S, 5B4, 5H, 5N, 5W, 5X, 5Z, 6Y, 7P, 7Q, 8P, 8Q, 8R, 9G, 9H, 9J, 9L, 9M2, 9M6/8, 9V, 9Y, GB5CC (RSGB HQ station), various other HQ stations.

The results of the 1993 contest will appear next month.

BARTG RTTY Contest

0200z Sat to 0200z Sun, March 19-20

The object of this contest, which is sponsored by the British Amateur Radio Teleprinter Group, is to work as many amateurs worldwide as possible on RTTY, on 3.5-30 MHz (no WARC bands). Categories include single operator (all band & single band), multioperator, and SWL. Operation is limited to 30 hours out of the 48 hour contest period. Rest periods must be at least 3 hours each.

Exchange RST plus a 3 figure contact number and time in GMT (full four figures). SWLs must show the callsign of the station heard, report of message sent, and callsign of station being worked. Score 1 point per contact. Multipliers are the total number of countries worked on each band, and the number of continents worked on all bands (counted once only). Call areas within W/K, VE/VO, and VK count as separate "countries", and continents are as defined for WAC. The final score equals QSO points x country multiplier x continents. Use a separate log for each band, and include a summary sheet showing all usual details. Send logs to be received by 27 May to: John Barber G4SKA, 32 Wellbrook Street, Tiverton, Devon, EX16 5JW, England.

CQ WPX Contest

SSB: 0000z Sat to 2400z Sun, March 26-27
CW: 0000z Sat to 2400z Sun, May 28-29

This contest is sponsored by CQ Magazine, and the objective is to contact as many stations worldwide as possible on 1.8-30 MHz (except 10, 18 & 24 MHz). Categories include: single operator (either single or all band), subdivided according to power (unrestricted, low power max 100 W O/P, and QRPp max 5 W O/P); and multioperator (either single or multitransmitter, all band only). Single operator stations are where one person performs all operating, logging, and spotting functions. The use of DX spotting nets places the station in the multioperator single transmitter category. Multi-multi stations must have all transmitters located within a 500 m diameter circle or within the property limits of the licensee's address, whichever is greater. All antennas must be physically connected by wires to the station transmitters and receivers.

Exchange RS(T) plus a 3 digit number starting at 001. Continue to 4 digits if past 1000. Multitransmitter stations must use separate numbers for each band. Score 3 points (14-30 MHz) or 6 points (1.8-7 MHz) for contacts with stations on different WAC continents, and 1 point (14-30 MHz) or 2 points (1.8-7 MHz) for contacts with stations within the same WAC boundary. Contacts with stations in the same country are permitted for multiplier credit but have zero point value.

The multiplier is the total number of prefixes worked on all bands (each prefix is counted only once regardless of the number of different bands on which it is worked). A "prefix" is the unique letter/numeral combination forming either the first part of the callsign, or else the normal country identifier for stations using their home callsigns in another DXCC country. For example: N8, W8, AG8, Y22, Y23, HG7, HG73 are all separate prefixes. The prefix for both N8ABC/KH9 and KH9/N8ABC is KH9. KH6XXX operating from Ohio could sign /W8, /N8, /K8, or any other prefix authorised for that district. Portable designators without numbers will be assigned zero after the letter prefix, eg N8ABC/PA becomes N8ABC/PA0. Any calls without numbers will be assigned a zero after the first two letters, eg RAEM becomes RA0EM. Suffixes indicating maritime mobile, mobile, portable, alternate location, and licence class do not count as prefixes (eg /MM, /M, /P, /A, /E, /J). The final score is QSO points x multiplier.

Logs must show times in GMT, with breaks clearly marked. Show prefix multipliers only the first time they are worked. Logs must be checked for duplicates, correct points, and prefix multipliers. Logs must be accompanied by a sorted alphanumeric list of prefix multipliers, and a summary sheet showing call, name, address, category, power, scoring information, and a signed declaration that all contest rules and radio regulations were observed. Logs may also be submitted on 3-1/2 or 5-1/4 DOS disk

in ASCII format (.BIN, .RES, .DBF, .WKS also acceptable), providing a sorted multiplier file and a paper summary sheet are included. Send logs postmarked by 9 May (SSB) or 8 July (CW) to: WPX Contest, 76 N. Broadway, Hicksville, NY 11801, USA. Indicate SSB or CW on envelope.

A comprehensive range of trophies and plaques is offered, and certificates will be awarded to the highest scoring station in each category, country and VK call area. To be eligible for awards, single operator stations must show at least 12 hours operation, and multioperator at least 24 hours operation. Single band entries showing points claimed for more than one band will be judged as multiband unless otherwise specified. Where returns justify, 2nd and 3rd place awards will also be made.

Results of 1992 CQWW DX Contest

In the CW section VK6LW had the top 7 MHz score worldwide at 533,696 points, and set a new band record for Australia. Leaders for zones 29 and 30 were VK8AV and VK2BIR (SSB), and VK8AV and VK3DXI (CW) respectively.

Most top entrants submitted disks with their logs, which the organisers say makes the checking process easier and is much appreciated. The organisers have however requested that even when logs are submitted on disk, a paper copy of the log is also required. They prefer the following file formats: K1EA.BIN, N6TR.DAT, and DBASE.DBF. However, they also ask that K1EA files NOT be submitted in .RES or .10 through .160 formats.

The CQ contest organisers continue to enhance their log checking procedures, much of it now centring on the percentage of unique callsigns in each entrant's log. These typically range around 2-3%, although the CW contest showed uniques as low as an incredible 0.2% for K1ZZ (ie 5 calls out of 2300), and 0.9% for W1KM, K8GL, EA8EA, and 8P9Z. If you are interested in receiving a list of uniques in your log, contact Bob Cox K3EST, 1816 Poplar Lane, Davis, CA 95616, USA. For a comprehensive report on your log, include a DOS disk plus US$6.00 to cover mailing costs. A more detailed discussion of uniques appears in CQ Magazine for September and October 1993.

SSB (Single Operator, High Power Category)

Call/Band/Score/QSOs/Zones/Countries
* = Certificate Winner

VK2BIR*	A	983,235	1057	102	201
VK5GN*	"	862,278	1110	95	179
VK3TZ	"	414,425	540	103	172
VK8AV	"	251,340	346	102	193
VK5FOX	"	148,830	451	38	72
VK4DDK	"	21,216	119	36	50
VK8SD	"	20,460	96	34	59
VK2GAH	10	30,226	307	15	19
VK3DZM	80	15,678	134	18	21
P29DK*	A	738,183	1101	93	148

SSB (Single Operator, Low Power Category)

VK4UA*	A	468,958	565	73	197
VK3PU	"	358,154	504	86	176
VK2ARJ	"	239,070	454	71	124
VK2AYK	"	215,586	435	66	111
VK8BE	"	11,925	75	26	27
VK4NJQ	10	68,834	301	26	52
VK4NAD	"	50,688	264	25	41
VK4NEF*	15	149,513	583	30	61
VK3SM	20	28,105	153	23	54
VK6BHL	"	25,782	112	30	58
VK2XT	40	15,012	51	25	29
P29KH*	A	2,140,792	2163	112	234
P29JA	"	89,640	296	43	65

SSB (Multioperator Single Transmitter)

VK6YS		3,847,408	3477	118	270
VK4DMP		361,608	580	85	159
P20A		3,448,484	2877	134	308

CW (Single Operator, High Power Category)

VK8AV*	A	1,730,814	1625	116	250
VK4TT*	20	100,560	421	25	55
P29DK*	A	398,738	712	79	114

CW (Single Operator, Low Power Category)

VK3DXI*	A	1,867,762	1706	120	254
VK2BQQ*	"	355,384	500	90	158
VK2VM	"	218,094	463	61	101
VK3VT	"	70,680	213	40	74
VK8SD*	"	44,070	216	36	42
VK2NV	"	28,122	120	38	48
VK2SU	"	3,645	45	13	14
VK4XA*	10	251,120	1014	26	60
VK8BE	"	7,548	74	15	19
VK6BB*	15	49,714	263	24	43
VK6LW*	40	533,696	1453	31	93
VK3APN	"	88,176	334	26	62
P29JA	A	1,300	18	12	13

1994 JOHN MOYLE CONTEST

Well, once again those who enjoy a weekend in the bush should be planning for the John Moyle Field Day. Last year's feedback showed there is nothing basically wrong with the rules, so this year they remain much the same. However, I still suggest that operators read and familiarise themselves with these rules, and also read the comments printed with last years results. I hope to be on air the weekend prior to the contest, family and work commitments permitting, to help anyone with rule interpretations etc. My planned schedule is 14.275 MHz at 1200 EST and 3.570 MHz 2030 EST (approx) Sunday 13 March. For those without HF callsigns, perhaps you can join one of the nets as a second operator. If anyone wishes to contact me privately, my home phone number is 06 292 3260, and my address is shown in the Log Submission section below. Best of luck and see you on air, hopefully as one of the operators of VK1DX (Canberra DX Group). Complaints, if any, are best submitted by phone or with your entry.

OVERVIEW

1. The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.

2. The contest takes place on the 3rd weekend in March each year, and this year (1994) runs from 0100 UTC Saturday to 0759 UTC Sunday, 19-20 March.

3. The contest is open to all VK, ZL and P2 stations. Other stations are welcome to participate, but can only claim points for contacts with VK, ZL and P2 stations.

4. Entries shall consist of one choice from each of the following (eg 6 hour, portable, single operator, phone, VHF/UHF):

a. 24 or 6 hour;
b. Portable, Home, or Receive;
c. Single or Multiple operator;
d. Phone, CW, or Open mode;
e. HF, VHF/UHF, or All Band.

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3 ele 15M	$179
3 ele 20M	$289
M B Vert NO TRAPS 10-80 M	$249
Tri band beam NO TRAPS	$665
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SCORING

5. Home stations for all sections shall score:

a. 2 points per QSO with each portable station;

b. 1 point per QSO with other home stations.

6. Portable HF stations shall score 2 points per QSO.

7. Portable stations shall score the following on 6 m:

a. 0-49 km, 2 points per QSO;

b. 50-99 km, 10 points per QSO;

c. 100-149 km 20 points per QSO;

d. 150-199 km 30 points per QSO;

e. 200-499 km 50 points per QSO;

f. 500 km and greater, 2 points per QSO.

8. Portable stations shall score the following on 144 MHz and higher:

a. 0 to 49 km, 2 points per QSO;

b. 50 to 99 km, 10 points per QSO;

c. 100 to 149 km, 20 points per QSO;

d. 150 km and greater, 30 points per QSO.

9. For each VHF/UHF QSO where more than 2 points is claimed, either the latitude and longitude of the station contacted or other satisfactory proof of distance must be supplied.

LOG SUBMISSION

10. Each log must be accompanied by a summary sheet showing: callsign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest, and equipment used. For multioperator stations, the callsigns and signatures of all operators should be included. If any VHF/UHF QSOs have been made which qualify for more than 2 points, the latitude and longitude of the station during the contest must be included.

11. The summary sheet must include the following declaration signed by the operator, or in the case of a multiple operator station, one of the licensed station operators: "I hereby declare that this station was operated in accordance with the rules and spirit of the contest".

12. Logs must be postmarked no later than 30 April 1994, and forwarded to: John Moyle Contest Manager, 33 Willoughby Cres, Gilmore, ACT 2905, Australia. An ASCII text copy on a MS-DOS floppy disc would be most helpful, with the following alternative data formats also acceptable: Wordstar, Word5, WordPerfect, dBase3 & 4, Lotus 123.

CERTIFICATES AND TROPHY

13. At the discretion of the Contest Manager, certificates will be awarded to the winners of each portable section. Note that entrants in a 24 hour section are ineligible for awards in a 6 hour section.

14. The Australian station with the highest CW score will be awarded the President's Cup, a perpetual trophy held at the Federal Office, and will receive an individually inscribed wall plaque as permanent recognition.

DISQUALIFICATION

15. General WIA contest disqualification criteria, as published in *Amateur Radio* from time to time, apply to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

DEFINITIONS

16. A portable station comprises field equipment operating from a power source independent of any permanent facilities, eg batteries, portable generator, solar power, wind power.

17. All equipment comprising a portable station must be located within an 800 m diameter circle.

18. A single operator station is where one person performs all operating, logging, and spotting functions.

19. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use a callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multioperator entry.

20. A multioperator station is where more than one person operates, checks for duplicates, keeps the log, performs spotting, etc.

21. A multioperator station may use only one callsign during the contest.

22. Multiple operator stations may only use one transmitter on a given band at any one time, regardless of the mode in use.

23. Multiple operator stations are to use a separate log for each band.

24. A station operated by a club, group, or organisation will be considered to be multioperator by default.

25. None of the portable field equipment may be erected on the site earlier than 24 hours before the beginning of the contest.

26. Single operator stations may receive moderate assistance prior to and during the contest, except for operating, logging and spotting. The practice of clubs or groups providing massive logistic support to a single operator is, however, totally against the spirit of the contest. Offenders will be disqualified, and at the discretion of the manager, may be banned from further participation in the contest for a period of up to 3 years.

27. Phone includes SSB, AM and FM.

28. CW includes CW, RTTY, and packet.

29. It is not expected that any other modes will be used in the contest, but if they are, they shall be classed as CW.

30. All amateur bands may be used except 10, 18 and 24 MHz. VHF/UHF means all amateur bands above 30 MHz.

31. Cross-band and cross-mode contacts are not permitted for contest credit.

32. Contacts made via repeaters are not permitted for contest credit. However, repeaters may be used to arrange a contact on another frequency where a repeater is not used for the contact.

33. Portable stations may make repeat contacts and claim the appropriate points providing that at least three hours have elapsed since the previous valid contact with that station on the same band and mode.

34. Home stations may not claim points for repeat contacts.

35. Stations must exchange ciphers comprising RS(T) plus a 3 digit number commencing at 001 and incrementing by one for each contact.

36. Portable stations shall add the letter "P" to their own cipher, eg. 59001P.

37. Multiple operator stations are to commence each band with 001.

38. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for Home Stations, unless the receiving station is portable.

39. The practice of commencing operation and later selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest, and shall result in disqualification. The period of operation commences with the first contact on any band or mode, and finishes either 6 or 24 hours later.

73,
Phil VK1PJ
ar

WIA News

Whoops, Mr not Mrs

A new member listed in the November WIA News, VK4CQH, was incorrectly listed as Mrs H A Lehto, when the listing should have read Mr.

Apologies from the Divisional Membership Secretary for that little typographical error which, in biological terms, is somewhat more significant.

Divisional Notes

Forward Bias — News from the VK1 Division

Christopher Davis VK1DO

I hope that all our local amateurs have survived the school holidays and are back into the swing of things. I hope you managed to enjoy some of the outstanding conditions that prevailed during January at least on VHF.

The much mooted annual general meeting of the ACT Division takes place this month on Monday, 28 February commencing at 8.00 pm in the studio room, upstairs in the Griffin Centre. Bear in mind that nominations are only taken on the evening of the AGM if there are insufficient persons already nominated to fill the available positions. Please make certain that you are financial, as only current members are entitled to vote.

This will be the second last column that I write on behalf of the ACT Division. Because of the three week or so lead time required for each *Amateur Radio,* I will have written and dispatched the material for the March edition even before our AGM. A touch confusing. However, the point is that this will be the last column appearing while I am in the chair.

The past three years have been thoroughly interesting for me, both in terms of learning about the bigger picture, and realising just how difficult a task it is to stimulate, motivate and generally organise a local Division. The people who did these jobs twenty years ago, either had more enthusiastic support or simply more talent and/or time.

We are living in times that specialise in high speed communications, vast data transfer, massive expectations and lifestyles abounding with labour saving devices and yet we have too little spare time. I have given a little of mine for the last three years and step aside hoping that I have put something back into a hobby which has given me a lot during my life in terms of technical skills, hobby pastime and indeed, in terms of friends.

Our late esteemed colleague, Ron Henderson VK1RH, himself a tireless and dedicated committee member, was the author of an amendment to our rules some years ago instituting a sunset clause to encourage committee members to step aside every three years. Having had the experience of a three year stint of fairly demanding proportions, I can now heartily endorse the concept of serving on a committee for a sensible duration. I am certain, that given a break, the possibility of my contemplating another job in a few years will remain palatable, having stood aside prior to burn-out.

I hope that you will attend our AGM. The various reports that are tabled at this meeting are the only written guides to the state of our Division. Complaining behind the scenes that you don't know what is going on is unforgivable if you don't bother attending at least this one meeting per year. Demonstrate your membership commitment by participating actively in the democratic process.

I look forward to seeing you there!

VK2 Notes

John Robinson VK2XY

The Division's recruitment and retention campaign offering a dual-trace oscilloscope as a prize, which ran between March and November last year, closed on 30 November. The prize draw will take place at the Central Coast Field Day at Wyong on Sunday 27 February. Be there, or be square!

The current recruitment and retention campaign, which began on 1 December last year, ends on Monday 28 February. Non-members who join (join up a friend!) or members who renew between those two dates are eligible to win a TM-241A 2 m, 50 watt mobile rig (first prize), or a TH-28A 2 m, 5 watt handheld. Total prize value is over $1400.

All grades of membership are eligible, plus 3-year and life members. If your renewal falls outside this period, no matter — you can renew early! If you do, please do it through our Administrative Secretary, Margaret Morris, NOT through the Federal Office in Victoria. The draw for the prizes is planned for the AGM in April. Thanks to Kenwood Electronics Australia for sponsoring the promotion again.

Another EGM

Following a petition from more than 35 members last December, another EGM has been called. Council set the date as Saturday 26 February, 1994. It will be held at Doonside Community Centre, Cnr Hillend Rd and Graham St, Doonside, commencing at 2.00 pm. Note that this is the day before the Central Coast Field Day.

The notice of motion on the petition seeks to pass a motion of no confidence in Council and call a ballot for elections. The AGM will be five weeks after the EGM when a new Council will be elected anyway. Closing date for nominations is 27 February, the day after the EGM.

Donation from Telecom

Telecom has donated more than 500 FM828 VHF transceivers to the Division, announced at Council's January 4 meeting in Wollongong. The official handover took place on 21 December. Dick Smith VK2DIK accepted the donation on behalf of the Division, from Mr Charles Zoi from Telecom corporate marketing. A significant quantity has, by now, been passed to various volunteer emergency service groups, including WICEN and bushfire brigade services. The rest are being sold to members on a "first come, first served" basis. Valuable publicity about the donation appeared in the January 10 issue of The Australian newspaper, page 16, following a press release issued by Roger Harrison VK2ZTB, and on ABC Radio 2BL on the Bob Hughes morning show the next day. Bob (VK2YOW) is a member — natch!

Dural Closed

Following two unrelated incidents, the Dural transmitting station has been closed until further notice. On 2 January, three people (including one Councillor) put to air a broadcast without the knowledge or authority of the Council or Divisional executive. This was not the first occasion in recent times. As the incidents breached the Division's licences, and following considerable discussion among the President, Vice-President, Secretary and two other Councillors, being a majority of the Council, the equipment at Dural was disabled on 2 January and the building secured. A notice was posted on the building's door.

An incident involving the Division's packet BBS, VK2RWI, in which member David Horsfall VK2KFU was alleged to have published defamatory bulletins on 28 December, brought threatened legal action for breach of the licence and defamation from Val Bergman, who is the wife of Roger Harrison, Divisional Secretary. As a result, the packet BBS has been closed down until further notice, also. No further legal action ensued. I was delegated to handle this legal business for the Division as Secretary Roger Harrison declined owing to his relationship with the plaintiff.

This latter incident has serious repercussions. A packet BBS operator is a "knowing publisher" of whatever is posted to the packet BBS under his or her control. All BBS operators in a network, who carry defamatory bulletins are liable

as anyone who may be knowingly involved in the publication of defamatory material can be enjoined in a defamation action. And juries in recent defamation cases in NSW have awarded astonishingly high sums in damages. All BBS operators have a duty to exercise control of what's "published" on their BBS. "Freedom of speech" may be a right, but it does not include the right to defame. Even the truth can be defamatory. This is a complex issue, which needs wide discussion and I've only just touched the tip of the iceberg here.

Notes: NTAC Chairman, Cesar VK2TCM, resigned in January. Council accepted the resignation but not his reason, which related to "control". Councillor John Simon VK2XGJ has replaced him. Broadcast Coordinator Steve Pullan VK2QZ resigned in January. The Ch 7000 Dural voice repeater was restored to service for WICEN on 8 Jan.

As Dural is temporarily closed, Sunday broadcasts now originate from Parramatta on 40 m (morning) and 80 m (evening) and 70 cm, with relays. A reminder: the Division's AGM is on Sunday April 10. That's NOT early, as the rumours going around assert. The Articles quote April, or the nearest practicable date.

5/8 Wave — VK5 Notes

Rowland Bruce VK5OU

Christmas has been and gone; so has the new year. Hope you got the goodies you hoped for. What did you think of the Christmas get-together held at the BGB headquarters on 7 December? The Council would like to know.

Is your Club sending representatives or delegates to the Clubs Convention over the weekend of February 27/28? If not, why not? There are twenty-four WIA affiliated groups which are entitled to be represented. They are ACBRO, Adelaide Hills, Alice Springs, Barossa, Darwin, Elizabeth, Lower Eyre Peninsula, Lower Murray, Mid North, Moomba, Naracoorte, North East, Port Adelaide, Port Augusta, Riverland, SA ATV, SAPUG, Scout Association, South Coast, South East, Southern Cross DX Group, Whyalla and Yorke Peninsula Repeater Group.

For those still aspiring to a licence (or upgrade) you will find an examination is being held in Adelaide each month of 1994. Besides the WIA, services are provided by Adelaide Hills ARC, Elizabeth ARC, North East RC and the Taylor Radio Group. The WIA Divisional Examinations Officer, Don Wilton, tel 388 6966, will be able to tell you which month's exam is being run by which group. If you are still chasing the Morse component, don't forget the WIA practice session each night of the week on 3.550 MHz +/– QRM.

And one final reminder for the New Year. HAVE YOU SENT OFF YOUR SUBSCRIPTIONS? Fees this year remain at $70 for the third year running.

VK6 Notes

Cliff Bastin VK6LZ

Notice of Annual General Meeting

It is hereby notified that the Annual General Meeting of the West Australian Division of the Wireless Institute of Australia will be held on 19 April 1994 following the General Meeting which commences at 8 pm. The meeting will be held at the Westrail Centre, East Perth.

Agenda

1. Consideration of the council's annual report
2. Consideration of the financial report
3. Consideration of other reports
4. Election of office bearers, viz president and vice-president of the Division and seven other councillors
5. Election of two auditors
6. Appointment of a patron
7. General business which has been duly notified.

Notice of Motion for the AGM must be received by the secretary not less than 42 days prior to the meeting and must be signed by at least three members.

Nominations of a candidate for election to council must be received by the secretary in writing not less than 42 days prior to the meeting, with an intimation that such candidates are willing to act. A candidate may submit a statement not exceeding 200 words outlining his or her case for election, and experience. Each nomination shall be signed by two members proposing the candidate. Candidates must possess a current amateur licence.

Proxies

Any financial member entitled to vote may appoint a proxy, who must also be a financial member entitled to vote, to speak and vote on his/her behalf. Each such proxy must be in the hands of the secretary prior to the meeting and be in the following form: I....., a member of the Institute, hereby appoint .....also a member of the Institute, to act for me as my proxy, and in my name to do all things which I myself being present could do at the meeting of the Institute held on.....
Signed:
Witness:
Date:

QRM from VK7

Ted Beard VK7EB, VK7 Divisional Secretary

The Annual General Meeting of the VK7 Division will be held at the Southern Branch Activity Centre, Queens Domain, Hobart on 26 March 1994 commencing at 1400 hours sharp.

All Notices of Motion for the AGM must be received by the Secretary not less than 28 days prior to the meeting, and must be signed by at least three (3) currently financial members.

Nomination of Candidates for election to the Divisional Council must be received by the Secretary, in writing, not less than 21 days before the AGM.

Proxies are to be deposited at the Registered Office of the Institute, Town Hall, Macquarie Street, Hobart, 7000 at least 24 hours before the time appointed for the meeting.

All the above items are in accordance with the Articles of Association.

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QSP News

NSW Bushfires

The Federal QSP from Kevin Olds VK1OK refers to the VK2 bushfires. Our Production Editor, Bill Roper VK3BR, who was visiting friends in Newcastle, had near first-hand experience of them. Due to emergency closing of highways, Bill was three days late in returning to Melbourne for production of this issue, necessitating considerable overtime work to "catch up"!

We hope no amateurs are among those who lost homes and equipment in the fires. We are sure many amateurs have helped with WICEN support of emergency communications for the firefighters.

ar

How's DX

*Stephen Pall VK2PS**

There is no doubt that conditions are worsening as the solar activity is diminishing. Mid December saw the solar flux number 84 and, accordingly, the high band activity was very irregular and sometimes just non-existent. In contrast, the 2 metre band, due to the atmospheric changes on the east coast of Australia, has produced good DX possibilities to New Zealand.

When the magnetic field of the Earth was quiet there were excellent opportunities for DXing on 40 and 80 metres. As a result of changing band conditions more and more DXers are moving to the lower bands.

Just recently a new net has emerged around 7062 kHz at 1030 UTC. Kerry VK4MZ, Dave TI5RLI and other helpers, are conducting the activity which calls itself the "Pacific Rim 40 DX Group". Besides the VK and ZL participants the following countries are almost regulars: AH6, C6, F04, FM5, FT5, HC, HH, HL, JA, JT, KP2, LU, PJ2, PZ, PY, P43, TI, T32, YB, YV, VE, W.

The 80 metre band is also very active. USA and South American contacts are quite common with some choice DX popping up from time to time. Eric S21ZG made quite a number of VK and ZL operators very happy when he appeared in the 80 metre "DX window" on New Year's Day.

Silent Key — Lloyd Colvin W6KG

The well known "Yasme" DXer Lloyd Colvin died of a massive stroke and heart attack on 14 December whilst on a DXpedition in Turkey. His wife Iris W6QL was at his side when he passed away. The Colvins are well known DXers. They have activated more than 200 DX countries since World War 2 when they started their DX activity under the auspices of the "Yasme Foundation". In January 1990 they visited Australia and met many of their Australian radio amateur friends in person (see "The Colvins in Australia", AR Jan 1991). The Colvins were the old style DXers travelling together, with little publicity and always using their own funds, never asking for any donations. The DXing world of radio amateurs will sadly miss Lloyd W6KG for many decades to come.

Peter Island 3Y0PI

As you read this, the long awaited DX activity from this remote, uninhabited island near the Antarctic continent in the Bellinghausen Sea, is in full swing and hopefully you were able to have had a contact with them. This is the expedition which was "almost cancelled". In European packet DX bulletins circulating world-wide and issued by K0IR and ON6TT, the full story of the almost cancelled expedition was told for the first time on 21 December 1993. Here is the condensed version of the four pages of the bulletin:-

The expedition is using two Russian polar ships converted for the tourist trade and equipped with helicopters, which are plying a tourist route from the East to the West and from the West to the East on a tight, simultaneous schedule around the Antarctic continent. By previous arrangement the two ships were to detour further south to land and later to pick up the expedition members from the island.

At the beginning of November the expedition learned that, due to the uncertain economic situation in Russia, the Russian Antarctic Research Institute, which is in charge of the pick-up vessel, "could not guarantee" the transport of the expedition members back to South America. On 4 December it was evident that the Russians pulled out of the deal. Nothing could change their mind, not even more money. An urgent worldwide enquiry by the organisers by telephone and fax was not able to find a suitable replacement charter vessel.

A few days passed in complete desperation and confusion. The charter company responsible for the ship going to Peter Island wanted to unload the expedition's equipment, which was already on board, in the last port of call in South America. Time was ticking away. Finally a contact was made with the director of the Russian Antarctic Research Institute who by now was fully briefed of the importance of the DXpedition by Jukka OH2BR a Finn radio amateur who lives in St Petersburg. On 7 December the Russians advised the DXpedition that they would "guarantee the pick-up" and requested a personal meeting with the expedition organisers. This took place on 17 December when the technical details of the pick-up/departure were discussed and agreed upon. The pickup vessel will be the "Akademik Fedorow" with freight helicopters able to lift 3.5 tons at one time. The boat will arrive at Peter I Island around 12 February and will depart after a stop over of 36 hours.

During this time the expedition has to pack-up and depart with the many tonnes of equipment brought onto the island. Once more, it is needless to say, all these unforeseen extra efforts mean an enormous hidden cost in the expedition's budget. Just the phone bills in the month of December amounted to well over $2000! Once again they call on the amateur fraternity for financial support as the expedition members have reached the limit that each of them can personally contribute to this expedition. Send your financial help to AA6BB Jerry Branson, 93787, Dorsey Lane, Junction City, OR 97448, USA.

As reported earlier the expedition plans to make 70,000 to 90,000 QSOs. QSL for SSB contacts to AA6BB (above address). For CW and RTTY contacts, send to KA6V Joan Branson of the same address. Separate envelopes please with return postage.

St Peter & St Paul Rocks — PY0S

According to a press release dated at the end of November, the Natal DX Group in Brazil is planning to activate these rocks with four operators running two stations 24 hours a day in CW and SSB on all bands and modes. The intended stay on the rocks is three weeks giving everybody the opportunity to work this rare DX country. The callsigns will be PY0SK and PY0SP. QSL for SSB, RTTY, 6 m, packet and satellite goes to Karl PS7KM, and for CW to PT7WA. The operation was planned for the end of January or during February 94. However, no further news has been received since. One only hopes that they will appear on the bands as predicted.

Pratas Island — BV9P

The "on again, off again" saga of Pratas island is continuing (see AR Nov 93). Early December had the news that the Taiwanese authorities are reluctant to allow foreigners to go to Pratas Island, but they agreed to allow OH2BH, OH1NYP and 9V1W to take part in the proposed activity. The new date was to be 15 December for 10 days. Nothing happened because Taiwan had elections at that time and the military was too busy with other things to provide assisted transport to the island. Besides all this the aeroplane servicing the island can carry only 11 passengers. Later news reversed the previous situation. The final new commencing date was mentioned around the end of February or around 6 March. Early January brought the latest news. A four and a half hour operation on 5 January by a number of Taiwanese

operators. It appears that they will be active during a return plane stopover on the IOTA frequencies to establish a new IOTA island. By the time you read this we will know whether this latest news became a reality or not?

The VK9 & VK0 QSL Bureau

Neil Penfold VK6NE, who manages the VK9 and the VK0 QSL Bureau on behalf of the WIA, reminds everybody that, when QSLing with VK9 and VK0 stations, one should follow the following simple rules:- If the station requests direct QSLs, either to a Callbook address or via a nominated direct QSL manager, please follow that instruction and do not QSL via the Bureau. Use the VK9/VK0 Bureau only as a last resort, bearing in mind that there is a very long delay getting a card turn-around, and that not all the VK9/VK0 operators are collecting cards from the Bureau or have established a credit for forwarding the incoming cards. The following operators do not collect Bureau cards:- VK9NS, VK9NL, VK9ND, VK9NI, and VK9NP.

Here is a list of operators who maintain a credit with the Bureau for forwarding of their incoming cards: VK9CB, VK9CK, VK9CL, VK9LA, VK9LH, VK9MM, VK9WW, VK9XK, VK9XL, VK9TR, VK9XN, VI9XN, VK9XM, VK9XZ, VK9XO. In the last few years no VK0 station has instructed Neil as to what to do with their cards.

Future DX Activity

- The next radio amateur to be active from the French Antarctic Base, Adelie Land, Petrels Island (IOTA AN-017) starting March 94 is Robert FT5YF. Robert was at this base once before in 1988. QSL to F3CJ (ex-F6ESH) Joel Cathelain, 11 Rue De Buiry, 62156 Vis en Artois, France.
- STOK club station in Khartoum, Sudan was reported to be working on 18085, 21001 and 24895 kHz, between 1230 and 1430 UTC. QSL to Box 617, Khartoum, Sudan, Africa.
- Kiyoko, the popular lady operator on the various Pacific islands early in 1990 is now in Nepal for the next one or two years. She called into the Southern Cross DX Net on 18 December (14226.5 at 1100 UTC) and made many contacts with VK, ZL and others. QSL direct only (she is not a member of the JARL) to Kiyoko Yamakami, PO Box 3, Tokaimura, Ibaragi, 319-11, Japan.
- Changes in the ANZA net schedule (21205 kHz at 0500). Due to the poor propagation, if no check-ins are heard by 0515 the net will move to 14164 kHz.

Terry VK8KTC in his well equipped "shack" on Groote Eylandt NT.

- Belize, V31. Art NN7A and Mike NG7S will operate as V31JZ from South Water Cay (IOTA NA-180) starting February 13 for one week.
- Lars LA5EBA will be active for the next 6 months from Svalbard Islands as JW5EBA.
- Peter XT2BW left Burkina Faso at the end of January to go to Ghana for 3 months. He intends to be operational from there. QSL to WB2FQH.
- 3X0DEX can be heard on 18123 kHz at around 0800 on Sundays. QSL to FD1RUQ, PO Box 24, F-22190 Plerin, France.
- HC1JOL Keith can be heard quite often on various nets. He has been connected with the Christian Broadcasting Station in Ecuador (which developed the "Quad" antenna) for the past eight years. QSL to Keith Clukey, PO Box 17-17-691, Quito, Ecuador, South America.
- My crystal ball says that 1994 could see activity from one or two very rare DX countries.
- Niko SV2WT reports that Monk Apollo from Mount Athos is active again on the HF bands and would like to be active on most DX nets.
- 28 February will probably see the handing back of Walvis Bay by South Africa to Namibia (what about Penguin Islands?). This could mean the deletion of one or two DX countries from the DXCC list.

Interesting QSOs and QSL Information

- 9M8DB — Jonny — 14187 — 1153 - Nov. QSL to Jonny Tan, PO Box 1549, 98008 Miri, Sarawak, East Malaysia.
- HP1XVH — Gunter — 14238 — SSB — 0432 — Dec. QSL to Radio Ocelot Contadora Island, Gunter S Hamacher, AP6 7413, El Dorado, Panama 6A, Republic of Panama, Central America.
- ZC4KS — Kevin — 14226 — SSB -1223 Dec. QSL to G0PWR, K E Staley, 11 West Lawn, Findern, Derbyshire DE6 6BB, UK.
- LU9XPP — Fer — 14260 — SSB — 0651 — Dec. QSL via the Bureau.
- YJ0AFEU — Daniel — 14190 — SSB — 0639 — Dec. QSL to NA5A, Michael L Thomas, 5717 Puerto Vallarta, North Richland Hills, TX 76180 USA.
- TI5RLI — Dave — 7062 — SSB — 1107 — Dec. QSL to WA4JTK, Alan E Strauss, 17401 NW 47th Ave, Carol City, FL 33055 USA.
- JT1BV — Naran — 7060 — SSB — 1114 — Dec. QSL to JT1BY Tom Tomorbaatar, Box 470, Ulan Bator 13, Mongolian Republic.
- HH7PV — Pat — 7060 — SSB — 1052 — Jan. QSL to AA5DW James L Greene III, 2409 Maxwell, Midland, TX 79705 USA.
- T32BB — Bob — 7060 — SSB — 1209 — Jan. QSL to DF6FK Norbert Willand, Leipziegerring 389, D-6054, Rodgau-3, Germany.
- S21ZG — Eric — 3795 — SSB — 1209 — Jan. QSL to W4FRU John H Parrott Jr, PO Box 5127 Suffolk, Virginia — 23435 USA.

From Here There and Everywhere

- Alan VK4SS, commenting on the CW activity of Roger ZD9SXW, advises me that he worked him on 19 October 1993 and was very happy having worked

Tristan Da Cunha again after so many years. He sent his request for a QSL card direct to Roger G3SXW, and was more than disappointed when he received the reply from the man himself — he was not in the log! Here are some details of Roger's letter to Alan: *"Just back from ZD9...I knew VK/ZL was going to be very tough...a 7000 ft mountain stands in the way...I listened carefully for VK/ZL...and stopped the pile-up to listen for openings...and called VK/ZL only...Nothing doing...Only two VK's were worked and not one ZL. The two VK stations worked were VK6HD on 15 October and VK2BJ on 16 October. Sorry Alan, but I tried hard..."* End of quote from the letter. There was some rumour on the bands in October that a "slim"? was also posing as ZD9. How many of our readers were duped by this "slim"? Roger's letter supports this possibility.

- Sergey Tsybizov advised Bill VK2XT that he will be on Dickson Island (73°N and 80°E) for the next 2 — 3 years. From time to time he will also visit Franz Joseph Land. The callsigns used will be 4K4/UA0KBZ (Dickson Island AS-005) and 4K2KBZ (Franz Joseph Land EU-019). QSL direct only as he is not a member of the Russian QSL Bureau. Send SAE and one "green" stamp. He says he has no problems with the mail at the local Post Office. Address is PO Box 2, Dickson Island 6632441, Russia.
- Following is the Slovak QSL Bureau's Address: SARA, PO Box 1, 85299 Bratislava 5, Slovak Republic, Europe.
- According to the newsletter of the Dragon Amateur Radio Club (Wales, UK) the special event station GB2VK made 300 contacts on 22 September commemorating the first "wireless message" between the UK and VK.
- For those who worked the two Christmas Island stations in December here are the QSL addresses:- VI9XN to W5KNE, Bob Winn, 635 Williams Way, Richardson, TX 75080, USA. VK9XO to VK4CRR, Bill Horner, 26 Iron St, Gympie, QLD 4570. Returning from Christmas Island to Perth (WA), Bob W5KNE phoned me and gave some news of the VI9XN activity. Bob made about 7500 QSOs under very poor conditions, especially on reception. Surprisingly Christmas Island has a high noise level on all bands except 15 metres. The noise is generated by atmospherics, commercial RTTY (30 metres), interference from the north by mobile radiophones (10 and 40 metres) and interference by a local radio beacon. As far as antennas are concerned, the tribander beam lent to him (10-15-20 metres) was not useable, but he used a minibeam on 12 and 17 metres. The rest were dipoles for 15-20-30-40 and 80 metres. The noise level sometimes reached S9 which made DX operation very challenging and also very frustrating. Their location on the top of the highest hill gave them an operating room and shelter from the elements, but very little else as far as personal comfort was concerned. First contact made was with AA6TT on 27 November at 1356 UTC, and the last on 14 December at 0820 UTC, CW with JA4AHV. The last day was spent dismantling the wire antenna system and putting away miles of coax cable and rope.

  There was a third activity from the Island at the beginning of November. Stephen VK6VZ was active as VK9XZ and made 500 QSOs in eight days from 6 to 14 of November. His location near the beach favoured propagation to Europe and as a result he had no contacts with North America and only 16 contacts with VK. His QSL cards are now in the mail.
- The station ST2/G40JW reported in Dec 93 AR has written now to Austin VK5WO and has given his postal address as c/o STOK, PO Box 617, Khartoum, Sudan. According to Abdusalam, an operator of STOK, the station is the first official Club Station and is located in the capital city of Sudan and not in Southern Sudan as some had anticipated. Abdusalam said there are only three licensed amateurs in Sudan as ST2. Club stations in Sudan will all be given the ST0 prefix. ST2/G4OJW is now QRT because he had only a temporary licence which has to be renewed. He is now waiting for a new permission to operate.
- VK0MC was reported being active. He is a pirate. Do not waste your time and money and do not QSL.
- FT4WD and 5Z4BI closed down in November.
- VR6JJ and VR6BB in February 1993 made 35,000 QSOs on 160 to 10 metres. The QSL cards are now arriving via JF2KOZ.
- As reported in DX Bulletins the recent Libyan activity with the callsign 5AOA was a pirate, according to SP6BZ.
- The DX Advisory Committee has voted 13 to 3 in favour of establishing an RRTY Honour Roll. The ARRL Awards Committee voted 6 "yes" and 1 "no" in favour of establishing such an award.
- The prefix X5 used by some stations declaring their locations as The Republic of Servia is used by illegal Serbian operations in the disputed territory of the war-torn Republic of Bosnia-Herzegovina.
- Andy ZD8VJ leaves Ascension Island on 26 January to return to the UK.
- It has been reported that 12 amateurs on Pitcairn Island (pop 59 residents) decided to form themselves into an amateur radio club with the callsign VR6PAC.
- According to ON7GB, FT4WD on Crozet said to him that there could be an activity from Kerguelen Island (FT-X) or from Amsterdam & St Paul Islands (FT-Z).

QSLs Received

A71AN (4W op) HC2TI (4W op) 9MOS (5M W4FRU)

Thank You

Thanks to all of you who kept me informed and assisted me in compiling these notes, especially to VK2KCP — VK2KFU — VK2XT — VK2LEE — VK4CY — VK4MZ — VK4OD — VK4OH — VK4SS — VK4XW — VK5WO — VK6NE — VK6VZ — GB2VK — W5KNE, and the publications *QRZ DX, The DX Bulletin,* and the *DX News Sheet.*

*PO Box 93 Dural NSW 2158

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Update

Neil Penfold VK6NE advises that the 1993 Remembrance Day Contest results, as published on page 32 of the December 1993 issue of *Amateur Radio,* have been amended to include VK4HF with a score of 635, and VK4BB with a score of 405.

Make sure you amend your copy of the results now! **ar**

Editor's Comment

Continued from page 3

more years before my licence is 50 years old! I have dedicated much of my life to the future of the WIA. Anything which renders that future less viable must be opposed. Anyone who, motivated by their own personal ambition, encourages not just healthy dissent and debate, but factional violence and suppression of the truth, must be made to realise that the organisation is greater than any one of us. United we may be able to stand, but divided we will disintegrate beyond recall.

Bill Rice VK3ABP
Editor
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International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

*Gordon Loveday VK4KAL**

New Ideas for Observers in 1994

The monitoring service in Region 3 has been slowly reshaping the "method of attack". Firstly to save wasting precious listening time. Secondly, to get more information from the observations sent in by our observers in those States participating in Intruder Watch. This may also induce amateurs in other States to join the ranks. No medals, other than the knowledge that "I HELPED GET RID OF THAT PEST", and that is a nice feeling.

Now to the ideas:

1. DO NOT LOG A STATION ONLY HEARD ONCE. Check it on at least three different days. If still present, THEN LOG IT.
   REASON. Many signals come and go just as quickly and looking for them at a later date is just wasting time all round.
2. I will be "tasking observers" with both PRIMARY AND SECONDARY observations. The MORE important PRIMARY should concentrate on NO MORE THAN THREE consistent intruders.
   REASON. With ALL observers looking out for the same intruders over a longer period, I'm sure much more important data, eg traffic content, propagation info, multiple bearings, can be verified by the larger number of observations taking place.
3. Secondary tasks of observers can be the independent reporting of "other" intruders, which by their presence may be selected as primary at some later date. If we can get the results of such concentrated coordinated observations we should be able confidently to produce ITU Harmful Interference complaints much quicker.

Both the SMA monitor and myself have looked at a number of intruder stations' frequencies, only to find no sign of the reported intrusion, possibly because the time delay has been too great. Not much can be done between observer and co-ord in this matter. The time factor between the SMA or Region 3 co-ordinator needs to be reduced. Measures are being investigated to correct this. We could have quick 3-way, then.

The triennial IARU Region 3 will be meeting in Singapore in 1994. I hope to have sufficient information about regularity of intruders' frequencies used, directions of signals and their proof of origin, so I'm looking for positive results from the above new ideas!

The frequencies for a trial run are those which still lack a lot of information. Maybe others are more appropriate, but it would be a good idea to get the reactions of observers around Australia both from seasoned observers and newcomers. Here they are:
14.060 MHz, 14.210 MHz & 7.020 MHz. For those unable, because of propagation, to hear any of these, listen on 21.305 MHz. Spend most of your time with these. I will excuse a smaller log return on this month's effort. Please add your comments one way or the other on bottom of log sheet.

*Federal Intruder Watch Co-Ordinator, Freepost No 4 Rubyvale QLD 4702 or VK4KAL@VK4UN-1

ar

Pounding Brass

*Stephen P Smith VK2SPS**

Commemorating the 140th Anniversary of The Official Opening Of The First Morse Telegraph Circuit In Australia Between Melbourne And Williamstown On 7 April 1854

Remember our series on early Australian Telecommunications, and how the telegraph brought significant changes to the lives of our early pioneers of this great nation? Well, I have recently been informed that Mr Gordon Hill, President of the Sydney Morsecodians Fraternity, and members will be commemorating the 140th Anniversary of the official opening.

It has been decided that this great event will take place on Thursday and Friday, 7 and 8 April 1994. Some of the members participating in this historical event will include the following, all ex-PMG Telegraphists and active amateurs: VK1AL Alan Moore, VK1RY Fred Ryan, VK1AD Gordon Brown, VK2DHM Frank Mike, VK2NJ Ivan Thomas, VK3ED Geoff Butterworth, VK3EK Jack Paruscio.

The Victorian sites chosen, yet to be ratified, are the old Chief Telegraph Office on the corner of Bourke and Elizabeth Streets, Melbourne, and the old Williamstown Post Office, which is presently occupied by TAFE. I would like to quote part of the information bulletin, sent out by Mr Gordon Hill, President of the Morsecodians Fraternity, to prominent organisations and members.

The Morse telegraph system gave birth to a very talented group of men and women, the pioneer telegraphists and postal clerks who were, in time, scattered the length and breadth of Australia in all its Chief Telegraph and Post Offices and operated over a vast network of lines. This wonderful system endured for 110 years in its original form until about 1964 but its use gradually diminished with the introduction of mechanised, and later computerised, telegraph equipment. Many telegraphists and postal clerks who formed part of the old Post Master General's Department until its dismantling almost 20 years ago, are members of the Morsecodians Fraternity, today.

It is over 35 years since the last junior telegraphist or postal clerk-in-training learned Morse code using the key and sounder system in a manner identical to that depicted in many black and white films, and yet many old timers can still read Morse as though they had used it yesterday. Many operators were individually capable of sending and receiving thousands of words a day by Morse code at speeds exceeding 40 words per minute on occasions.

Although the 150th Anniversary of the opening of the first telegraph line is an obvious milestone to celebrate, our ranks of operators with the old skills will undoubtedly be slender when this occurs in the year 2004. With this in mind the Morsecodian Fraternity based in Sydney, but with members scattered over Australia, wishes to celebrate the 140th Anniversary of the first Australian telegraph circuit together with former telegraphists and postal clerks wishing to participate. The Fraternity is hopeful of obtaining support from a number of prestigious organisations such as Telecom, Australia Post, Historical Societies and newspapers. The National Science and Technology Centre in Canberra has been a valued supporter of the Morsecodians Fraternity for several years and has provided generous support and an invaluable venue and assistance with publicity in Canberra.

Former Victorian operators will doubtless be well represented. The group wish to establish a physical Morse link

between Melbourne and Williamstown (with the venues at each end to be identified). The Science Centre in Canberra would be linked with both terminals so that messages may be exchanged between the three centres. Members of the public visiting the venues would be able to view the proceedings or send brief telegrams to relatives or friends without charge. Official messages could be exchanged between the Lord Mayor of Melbourne and the Mayor of Williamstown. Perhaps telegrams from the Prime Minister and the Minister for Communications to both dignitaries to celebrate the occasion may be forthcoming. Authentic and nicely restored telegraph equipment of the time will be provided through the Morsecodians Society and its membership.

A number of Morsecodians have volunteered their services to man the telegraph lines at the three venues, Melbourne, Williamstown and Canberra. It is hoped that this small part of early Australian technological history may be prolonged just a little longer.

I will keep you informed of any changes that may occur, as we approach this historical event. To conclude this months issue, I am seeking information on the following Morse keys. If anyone can assist it would be appreciated. Admiralty Pattern 1271 Buzzer Repeater and Key Unit, year 1940 made by AGI Ltd and, Admiralty Pattern No 7681, Key Morse. I am QTHR or can be contacted on 02 992 933 any time after 1800 hrs.

Until next month 73 Steve.

**PO Box 361 Mona Vale NSW 2103*

Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Membership Renewal Date

Once again the Festive season has come and gone, with the usual lists of gifts to buy, Christmas and greeting cards to be sent, and the inevitable need to dig ever deeper into wallet, purse or pocket.

With recession upon us, and the possibility of some relief seeming quite distant, it might be that the average family is finding it more and more difficult to find the funds for necessities. Some may be forced to forgo luxuries such as club or organisation membership, especially during Christmas and the New Year. Being single and still employed (for the moment anyway!) I can manage the WIA subs when the statement arrives in December, but it occurs to me that in recent years, maybe some now ex-members of the WIA dropped out, never to rejoin, simply because the funds just weren't available at Christmas?

With the above in mind, I'd like to canvas the idea of WIA subs falling due at another time of the year, perhaps in July or even around tax return time (for those lucky enough to get one!).

Whilst I'm not suggesting that this may be the main reason for any decline in membership in recent years, is it not possible it may have been a contributing factor? What do other members think?

Bob Faravoni VK3EL
81 Jenkins St
Northcote VIC 3070

(This mainly applies to old-timers, Bob, as with cyclic billing for more recent members the renewal date is the anniversary of the original joining date. Ed)

Letter from Krenkel Radio Club about QSLs

To clarify the "Box 88" uncertainties, here is a letter that I received from UV3BW:-

The Krenkel Central Radio Club of the Russian Federation wishes Happy New Year for 1994 and subsequent improvement in our many years good connections. We confirm that the QSL bureau of the Krenkel Central Radio Club of the Russian Federation (PO Box 88, Moscow, Russia) as before shares QSL card and radio amateur diploma exchange between national radio amateur societies and radio amateurs of the whole world.

Sincerely Yours and 73
Chief of the Krenkel Central Radio Club
V Bondarenko UV3BW

Neil Penfold VK6NE
2 Moss Court
Kingsley WA 6026

Those Delayed Amateur Regulations — A Sense of Deja Vu!

After World War 1 the Royal Australian Navy was reluctant to allow anyone back on the airwaves but after continued pressure from the WIA and leading amateurs the government once again took control of licensing and promised new regulations for mid-1922, to allow amateurs to transmit and receive. Receiving-only licences were made available in August 1922 at a cost of two pounds but the promised new transmitting regulations were not forthcoming. This led to a heated debate in Parliament in October 1922 where Major CWC Marr, who had commanded a wireless squadron during WW1, and later entered federal politics, asked Prime Minister Billy Hughes some very pointed questions about the government's commitment and competence. Hughes promised the regulations would be released "any day now." (Does this sound familiar?)

Still there was no sign of the regulations with all manner of excuses, including the gem that one couldn't rush the Government Printer. This led one despairing anonymous amateur to pen the following ditty which appeared in Wireless Weekly:-

"Every morn at the break of dawn, my heart fills with palpitations,
As I search for a line and long for a sign of the new Wireless Regulations.
If the Govt Printer was only a sprinter, we might get some news, so they say,
So lets form a band to give him a hand, to end this distressing delay!"

The Regulations were finally released in December 1922. Come to think of it that was still a much shorter gestation period than the current Regulations debacle!

Colin McKinnon VK2DYM
52 Mills Rd
Glenhaven NSW 2156

Democracy?

I refer to the December 1993 editorial. Article 30 of the WIA Articles of Association requires the Divisional *"Committee of Directors or other governing body to authorise such person as it thinks fit to act as its representative either at a particular Convention or at all Conventions..."*

That clause is deliberately contrary to the foundation principle of our brand of "Democracy" which insists that the people's representatives be chosen by a ballot of the people. That principle is of course openly and legally flouted by corporation directors and managers who prefer that their "business acumen" be unhampered by the wishes of the owners.

Now that there is no chance that the WIA corporation will be delegated Spectrum Management responsibilities, it could concentrate less on business and more on being a member's institute. An amendment to Article 30 requiring Federal Councillors to be elected by a ballot of Division members would be a good beginning.

Lindsay Lawless VK3ANJ
PO Box 760
Lakes Entrance VIC 3909

(Some will argue against this on grounds of cost, others that it would be cumbersome to operate. As writer of the editorial I tend to support your viewpoint,

Lindsay, but cost from member's funds could be significant, particularly if extended to cover all appointments presently nominated. Ed)

Non Members

I have been meaning to write for a long time on the subject, BLUDGERS IN THE SYSTEM.

Why CAN'T the WIA Membership fees be a part of the LICENCE FEES? If the licence fees were structured that way, then everybody would contribute to at least some of the expenses. What I object to is the BLUDGERS who use the repeaters, beacons, slow Morse sessions, packet (in particular) and other facilities provided by the members, then write abuse, rubbish on air and otherwise, generally, KNOCK THE WIA and its MEMBERS. They ignore the fact that any POLITICAL, MONEY MAKING, ABUSIVE or OTHER UNSAVOURY and UNSATISFACTORY BEHAVIOUR ON AIR is STRICTLY FORBIDDEN under current LICENCE CONDITIONS.

How many times have other LICENSED (Non Member) Amateurs deliberately and maliciously "Dropped Carriers" on repeaters users? I would say countless.

A while ago, the WIA printed the call book with a "*" against members" names. I for one, agreed to this. Apparently it shamed some non members no end. It was said to have shamed members too. I can't see why. You don't get FREE service from your Automobile club (RAA, RACV etc) which is advertised to MEMBERS ONLY.

The WIA could devolve licensing the same as the examinations were devolved. I am sure many other members feel the same way.

Mervyn Millar VK5MX
31 Rickaby St
Croydon Park SA 5008

VK2 Elections

As a result of a meeting of concerned members of the WIA which was held in Sydney recently, a committee has been formed to encourage independent candidates to seek election to the council of the NSW Division of the WIA at the forthcoming council elections.

The committee consists of Peter Naish VK2BPN, Bob Meyer VK2BMU, John Brook VK2FUR, Alan Dark VK2XAT and Roger Henley VK2ZIG. No member of the committee will stand as a candidate.

The committee can be contacted at the address below.

Alan Dark VK2XAT
PO Box 372
West Ryde NSW 2114

Repeater Link

*Will McGhie VK6UU**

FM 828-3

This is the third circuit drawing of the popular FM 828 used in the majority of repeaters in Australia.

This month's circuit is of the audio pre-amp and mute circuit. The mute circuit in the FM 828 is a particularly good one, showing little sensitivity drift with temperature or supply voltage. The one complaint I have with the mute is the hysteresis which is about 5 dB. This means a 5 dB stronger signal is required to open the mute than close it. The end result is poor mute sensitivity for amateur service. The solution is to add a 10 Ω resistor in parallel with R66 (27 Ω) or increase the value of R69 (470 Ω) to around 2 kΩ.

The audio out from this part of the circuit is not muted. For repeater use audio from pin 26 (de-emphasised) or pin 25 (emphasised) are useful but not muted. Connecting pin 33 to pin 25 through a 2 kΩ resistor mutes the audio by applying 10 volts to the emitter of TR4 when muted.

All these circuits were produced on computer using the CAD program "Draft Choice". If you would like a copy of this CAD program and the FM 828 computer circuits let me know. Not all the FM 828 circuits are completed yet, as they take considerable time to draw onto computer. These circuits can also be made available via packet in 7 Plus format.

The CAD program "Draft Choice" is an excellent circuit drawing program and being shareware is easy and cheap to obtain. If ever amateurs were to agree on a CAD program for circuit exchange, this would be my recommendation.

If there are any errors in the circuits, please let me know.

FM 828 E BAND

A large number of E Band FM 828s are becoming available to the amateur at low prices. These 828s are the low band version and, as such, cover 68 to 88 MHz. Conversion to 6 metres is not as easy as the A and B band are to convert to 2 metres. I have just completed the conversion of an E Band 828 to 6 metres and will present the conversion information in a later edition of *Repeater Link*.

The receiver is easy. Just add 8.2 pF to each of the four front end RF tuned circuits to ground. This then allows the front end to tune down to 6 metres. The local oscillator multiplier coils require the addition of a ferrite slug in each. That is all that is required to convert the 828 E Band receiver to tune down to 6 metres.

The exciter requires several capacitors to be added to various parts of the circuit. Likewise, the transmitter PA requires capacitors to be added, but no rewinding of coils. Most important, however, is modification to the transmitter output harmonic filter. This filter has little attenuation at 100 MHz and the second harmonic of 6 metres is only about 30 dB down. I found that adding 2 turns to L1 and L3, and 1 turn to L2, attenuated the second harmonic by 60 dB. However, the transmitter modifications are not yet finalised, but if you want to make a start on an E Band 828 to 6 metres then the above information may be of help.

If anyone out there has converted an E Band 828 to 6 metres I would like to hear from you so I can compare my results to yours. With so many E Band 828s coming onto the market at very cheap prices, this could be a start to populating 6 metres.

The possibility of converting an E Band 828 to 10 metres is also under consideration with the crystals already ordered, more on that latter.

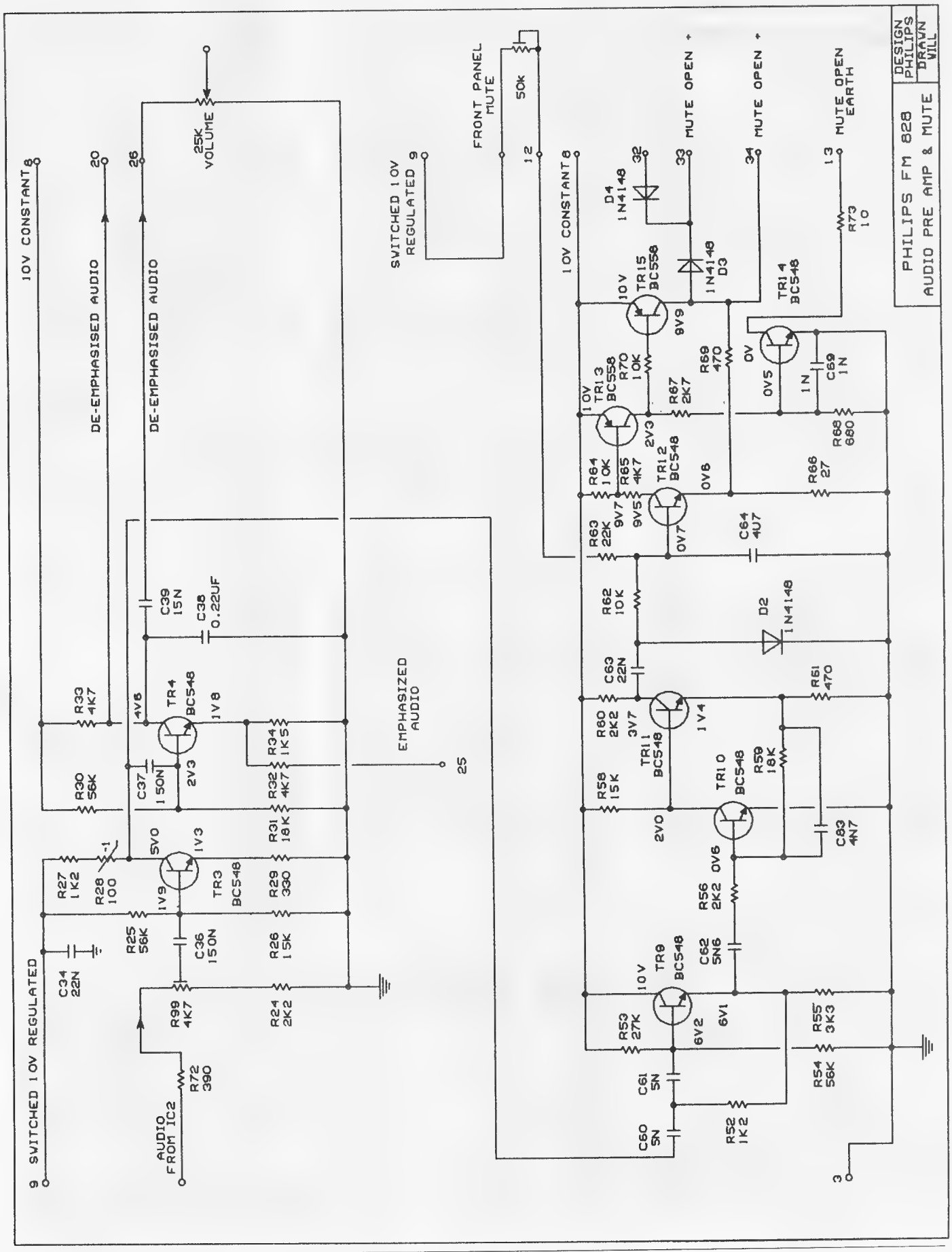
**21 Waterloo Cr Lesmurdie 6076*
VK6UU @ VK6BBS

QSP News

Old Timer's Recollections

Last December *Amateur Radio* published a letter from VK4YFF of Cairns, formerly of Geelong, suggesting a need for someone to interview people who have had a lifetime in radio and could add greatly to our historical knowledge of the early days.

John Bennett VK3ZA has generously volunteered to help in this activity. He will probably begin with the old timers named in the 4YFF letter but, if anyone else would like to contribute their own recollections, John would be pleased to hear from them, by letter at first. His postal address is PO Box 48, Dunkeld, VIC 3294. John, himself, has had an interesting career in broadcasting, AWA, and the army.


PHILIPS FM 828
AUDIO PRE AMP & MUTE
DESIGN PHILIPS
DRAWN WILL
10V CONSTANT 8
DE-EMPHASISED AUDIO 20
DE-EMPHASISED AUDIO 26
25K VOLUME
SWITCHED 10V REGULATED 9
FRONT PANEL MUTE
50k
12
10V CONSTANT 8
MUTE OPEN + 32
MUTE OPEN + 33
MUTE OPEN + 34
MUTE OPEN EARTH 13
D4 1N4148
D3 1N4148
TR15 BC558
TR14 BC548
R73 10
R69 470
R67 2K7
R70 10K
TR13 BC558
C69 1N
R68 680
R64 10K
R65 4K7
TR12 BC548
R66 27
R63 22K
C64 4U7
R62 10K
D2 1N4148
C63 22N
R61 470
R60 2K2
TR11 BC548
R58 15K
TR10 BC548
R59 18K
C83 4N7
R56 2K2
C62 5N6
TR9 BC548
R53 27K
R55 3K3
R54 56K
R52 1K2
C61 5N
C60 5N
EMPHASIZED AUDIO 25
C39 15N
C38 0.22UF
TR4 BC548
R33 4K7
R34 1K5
R32 4K7
R31 18K
R30 56K
C37 150N
R29 330
TR3 BC548
R28 100
R27 1K2
R25 56K
C36 150N
R26 15K
C34 22N
R99 4K7
R24 2K2
R72 390
AUDIO FROM IC2
9 SWITCHED 10V REGULATED
3

Spotlight On SWLing

*Robin L Harwood VK7RH**

One new development on the Spectrum has been the appearance of a new broadcasting station, which commenced on Christmas Eve 1993 at 1200 UTC. It is located on the island of Hawaii, close to its southern tip. As you have probably surmised it is a religious broadcaster and is an extension of World Harvest Radio who operates WHRI in Noblesville Indiana. Signals from KWHR, which are the call letters of the station, are consistently strong here, mainly because of their choice of frequencies out of the normal broadcasting allocations. Programming is very similar to WHRI but is separate, although I believe that a satellite feed is available from South Bend, Indiana. The full schedule for this broadcasting period for KWHR is as follows:

0200 — 0200 17555
0200 — 0600 17510
0600 — 1600 9930
1600 — 1800 7425
1800 — 2000 13625
2000 — 2200 13720
2200 — 2400 17510

The address is the same as WHRI, that is PO Box 12, South Bend, Indiana.

"Monitor Radio International" in Boston, MA, have sold their WCSN transmitter at Scott's Corner, Maine to another religious broadcaster for reportedly 5 million dollars. This will assist them in purchasing an additional sender at their Cypress Creek, South Carolina site. The purchaser of WCSN is believed to be an Adventist group and Adventist World Radio are emphasising that it's not part of their operations. A start up date has not yet been announced for the new station.

On 17 December at 1400 UTC, a piece of Australian broadcasting history came to an end, when the ABC in Brisbane closed down their shortwave service to the Outback. 4920 and 9660 kHz are now vacant frequencies. On the same day it had been planned that VLW, which carries the ABC in Western Australia on 15425, 9610 or 6140 kHz, would join them, but a last minute decision meant that they would continue on for a short period but would definitely close down soon.

Just as Brisbane went off shortwave, Papua-Nuigini inaugurated their 100 kW sender, relaying the "Karai" service on 9675 kHz. This replaced another 90 meter frequency and a 10 kW sender and now has a much stronger signal, which covers most of the SW Pacific region. The program is on the above channel from 1900 to 1400 daily, mostly in English and puts in a reasonable signal here all day until mid-evening, when it is swamped by the numerous broadcasters on the 31 metre band allocation.

In my job as VK7 Intruder Watch Co-ordinator, I have been hearing numerous non-amateur stations passing traffic, over the past six months. These stations usually congregate around the band edges, where there are numerous contacts going on simultaneously. Now, I am also noting that there is a similar trend going on in the exclusive aeronautical and maritime allocations and I very much doubt that these stations are engaged in traffic related to these allocations. Signals seem to be based north-west from here. Most of the traffic is in Indonesian but I have also noted some traffic in Japanese, Indochinese languages plus Taiwanese dialects. The appearance of these stations, especially in the exclusive aeronautical and maritime allocations, does pose more problems than we are having on our exclusive amateur allocations, I would think.

Well, that is all for this month. In conclusion, please note that there has been an alteration to the mailing address. It is now as follows: 5 Helen Street, Newstead TAS 7250. Until next time, the very best of 73 and good listening!

*5 Helen Street, Newstead TAS 7250

ar

VHF/UHF An Expanding World

*Eric Jamieson VK5LP**

All times are UTC

50 — 54 MHz DX Standings

DXCC Countries based on information received up to 20 December 1993. Crossband totals are those not duplicated by two-way contacts. A callsign cannot be displaced from its existing position except by another with a higher **confirmed** number.

Column 1: 50/52 MHz two-way confirmed contacts

Column 2: 50/52 MHz two-way claimed as worked but not confirmed

Column 3: Crossband 50/52 MHz to 28 MHz confirmed *

Column 4: Crossband 50/52 MHz to 28 MHz worked *

Column 5: Countries heard on 50/52 MHz *

CALL SIGN	1	2	3	4	6
VK4KK	93	93			4
VK4BRG	86	90			
VK2QF	83	85			
VK2BA	69	69			
VK4ALM	68	70			
VK4ZAL	68	68			
VK2BBR	54	64			
VK4JSR	53	56			8
VK4TL	51	54			
VK6HK	47	47			3
VK8ZLX	45	60		1	
VK3AMK	45	47			
VK8GB	42	42		3	
VK5RO	39	48			3
VK6RO	39	39		1	1
VK1RX	39	39			9
VK6PA	36	57			
VK5LP	35	36			9
VK3AUI	35	36			
VK3AWY	34	36			
VK3BDL	32	32			
VK3NM	31	34			
VK5BC	29	63			
VK2DDG	25	26		2	3
VK4KHZ	23	34			
VK3XQ	23	25			2
VK2KAY	21	23			
VK2BNN	20	21			
VK9LG	20	20			
VK7JG	20	22			2
VK4BJE	19	25			
VK4KAA	19	20			
VK3TU	17	19			
VK2ZRU	16	19			4
VK4ZSH	16	16			
VK2ZSC	16	29			
VK9LE	14	14			
VK3ALM	13	15			7
VK3KTO	11	11			
VK6OX	10	10		1	
VK5KL	06	11		1	6
Overseas					
JA2TTO	48	48			6
YJ8RG	25	25			

** In view of the overall success of Cycle 22, these three columns now appear to Have outlived their purpose. Consideration is being given to their deletion as from the next list which is planned for the August 1994 issue. Copy, additions or alterations to me by 20 June please.*

Contact of the Month

On 2/1/94 at 0400 **Trevor VK5NC** worked **ZL1IU** on 144.100 with 5x7

signals. At 0405 ZL1IU was worked by Colin VK5DK. Trevor said he had been attempting to work New Zealand on two metres for 29 years and finally his dedication paid off. Good work.

As a lead-in to the above, Trevor said he had earlier been monitoring New Zealand FM on 91 MHz and the Auckland VOR transmitter on 112.5 MHz plus 144.100 when out of the noise came ZL1IU! About the same time six metres was open to Kalgoorlie and there were a few VK2s. VK3OT had earlier spoken to a ZL1 on six metres but signals were not strong.

The last time a ZL was worked on two metres from VK5 was on 15 January 1986 when VK5ZEE at Woomera worked ZL1HH for a VK5 record of 3458.8 km. This VK5 record will be very difficult to better unless it is achieved by an operator at Ceduna in the far west of South Australia.

On 3/1 Doug **VK4OE** phoned to say that during the morning he had worked ZL1 on two metres tropo as did many other stations in VK2 and VK4. Tropo on that path would occur less often than Es. Also a two metre signal path had extended from Brisbane to Mackay. Conditions were obviously very good in the western Pacific as Guy FK8DH again worked several states on six metres including the long haul of 4800 km to Perth. I managed to work him at 0056 but my path was only 3000 km. Guy's signals were very good considering his use of a vertical antenna!

Beacon News

As one of the respondents to my recent request for information regarding the status of various beacons, **Charlie VK3BRZ** indicates that, on behalf of the Geelong Amateur Radio Club, he installed their two metre beacon on Mt Anakie on 27/11, details as follows: 144.530 MHz, 15 watts at the single turnstile (crossed dipoles) antenna, using FSK Morse code, key down is 750 HZ above the nominal carrier frequency, ident sequence — "de VK3RGL VK3RGL GF22DC VK3RGL VK3RGL GF22DC" followed by approximately 20 seconds of unkeyed carrier. CW speed is about 10 wpm. The rig is a readily modified Philips FM 828 and gives a very clean output. The ident controller was designed and constructed by Lee VK3PK. It has been frequently heard by VK5LP.

Charlie also advises that if anyone wants to duplicate their beacon they can supply the details and an EPROM with the ident sequence of their choice.

Meanwhile, they seek beacon reception reports, particularly from interstate and these can be sent via Packet either to VK3PK or VK3ATL or communicated directly to VK3BRZ via the nightly VHFers net on 3.695 MHz minus QRM. Charlie says the VHF net is very useful and proved its value during the big inland opening between VK1, 2, 3 and 5 which I reported in the October issue.

Ron Cook VK3AFW phoned to say that the former VK3RTG beacon on 144.430 was installed on 20/11 at Clayton for continuous operation.

John Martin VK3ZJC/KWA writes in support of the information above re the two Victorian beacons. It certainly is good to know they are now operating, just in time for the better than usual summer tropo conditions.

Andrew Perkins VK7KAP reports that they now have a beacon operating from Lonah in the north-west of Tasmania, between the towns of Ulverstone and Penguin on the coast at 150 m asl. It signs VK7RNW on 144.474 with ten watts to a crossed dipole antenna. Joe VK7JG supplied the transmitter and Andrew VK7XR and VK7KAP added the keyer, filters, antenna and installation. A report to hand says the beacon is being heard in Melbourne and Mount Gambier almost on a daily basis. The same applies here at Meningie. Whenever I look for the beacon it's usually there at signal levels from S1 to S5. Just for good measure I worked Andrew VK7KAP at 1030 on 30/12.

By the time you read this the former VK7RNT six metre beacon will be installed at Lonah, operating on 50.057 MHz, the frequency of the former VK7RSB beacon and with its new callsign of VK7RNW. A beacon licensed for 432.474 will follow about February/March. Andrew VK7KAP says he has almost completed a 1296.470 MHz beacon to be located on the coast at Devonport and signing VK7RAE.

All the above is great news for operators in the southern areas of VK3, 5 and 6. The news will be even better if the Adelaide 1296 MHz beacon can be re-installed during January.

Via a message issued by Rex VK8RH news has just filtered through to me indicating that the Darwin beacon VK8VF has been moved to a better location and the power raised to 100 watts.

First Worked from Australia List

The list has almost reached the stage when it can be published. Following the last interim list a few letters were received with details of times of working certain stations on the same date as published — a few were earlier but most a little later than those I hold here. In a few cases I am sure there are amateurs who have worked stations earlier but if these people do not lodge their claims soon then it will be too late — once the final list appears that's it as far as history is concerned and I do not propose publishing any errata.

However, it has pleased me immensely that the list was still open so that the world-first six metre contact to Antarctica by VK3OT could be included. At the risk of appearing parochial, it gave me much pleasure to be able to announce that for once Australian amateurs had done something outstanding before any others in the world, that of three stations working the Antarctic continent on 19 November 1993. As I write, our list of countries worked on six metres stands at 170.

Antarctica

As **Mark VK0AQ** has returned to South Australia from Casey at Antarctica I have been able to confirm that on 26/11 around 0920 he received a phone call which indicated ZL3TIC, ZL3TPY and ZL3TY were hearing his beacon. He immediately went on air but was unable to make contact with the Kiwis. On 2/12 he received a further call this time from a VK2 and despite calling no contacts were made.

Mark says there is little likelihood of any further six metre activity from that continent, at least in the short term. So that leaves the field wide open for some one to mount a six metre DXpedition to the area.

Incidentally, some time ago Mark said in a letter that at Casey, from time to time, he could hear Australian broadcast band stations over the 3950 km water path, in particular mentioning the 2 kilowatt commercial station 5AD operating from Adelaide!

Sporadic E Contacts

The six metre band has been its lively self with Es contacts available to all parts of Australia. JAs were still available during the latter part of November together with increasing numbers of VK4s.

Trevor VK5NC at Mount Gambier reports JAs on 3-4/12 around 2240 which is early. On 7/12 at 2047 he worked VK6AS at Esperance then VK4s APG, ACE, CV, KAB, CEM, SEA, PZ, JRC/m, heard BRG — all on two metres Es. 8/12: VK6AS and VK3s on two, then VK4s on six. 10/12: 0000 VK6AS, who then worked to Melbourne 5x9 on two metres Es. VK5NC worked VK2ZAB on both bands followed by FK8DH at 0239 and P29CW at 1020, both on six. 11/12: from 0712 on two metres VK4APG, VK4ZWB, VK2YLO, VK4RH, VK2DVZ and several VK3s. On six and two metres VK2XN, VK4QV, VK6AS, then for good measure FK8DH 5x9 at 0736 on six metres.

On 16/12 VK6AS on two. 17/12: VK2, 3 and 4 on six. 18/12 VK3s on six and two. 23/12: Melbourne stations had a very

good opening to ZL and VK5NC copied the VK3s at S5 via backscatter. Trevor said there were New Zealand FM broadcast stations at S9 up to 100 MHz but it appeared the MUF did not reach 144 MHz. VK7s were 5x9.

On 25/12 there were VK2 and VK4 stations on six. On 30/12 at 0110 **Doug VK4OE** worked FK8DH at Noumea 5x8/9 on 144.100 over the 1550 km path and VK4DH almost completed a QSO; Jim VK9NS on Norfolk Island was heard working ZL4AAA and VK2s on six. On 31/12 VK9NS was again working VK2s and was heard briefly by VK5NC.

Just for a change of scenery, on 18/12 at 0827 VK5NC operated 10 GHz wide-band FM from Cape Banks to VK3ZQB/p at Bridgewater Lakes near Portland for a distance of 102.1 km which exceeded the distance of an earlier contact at 70 km.

On 8/12 **Phil VK5AKK** had a two metre bonanza when at 1042 he worked VK6AS in Esperance, then from 1208 VK6ZFY, VK6KRC, VK6AO and VK6KDC all in Perth via Es. On 17/12 from 1026 he worked VK6AS and VK6YAU on two metres and VK6WG and VK6YAU on 70 cm.

Des VK3CY at Wedderburn sent a DX Report Form stating that on 22/12 from 1100 to 1200 he copied the Wellington ZL2UHF beacon on 145.202 MHz at 519 over the 2200 km path. At the time there were very strong six metre signals between VK5 and VK7 plus Adelaide Ch 2 TV strong into Devonport, Tasmania.

The **VK5LP** establishment was involved in a deadline for another project on 8/12 when all the two metre Es activity was taking place between VK3, 4, 5, 6 and 7 so I had to turn my back on it! True, I really did! On 9/12 I tried to work P29CW on six at 1045 without success even though he was 5x4 here. Es contacts on six most days until 29/12 when Ron VK3AFW telephoned to say that the Adelaide two metre beacon was 599 so we had a contact at 2301, then followed VK3BRZ, VK3CY and VK3DLM. On six VK4s for the remainder of the day with Lyn VK4ALM saying he had worked ZL4, VK2, 3 and 7. On 30/12 more two metres tropo at 1030 to VK7KAP, VK3DLM, VK3CY and a good try with Roger VK3XRS but he was too far away for the available propagation.

Bob Elms VK6BE at Albany says VK6 has been enjoying the best six metre conditions for 30 years. From 2/12 to 11/12 inclusive he had a total of 67 contacts on six metres to VK1 (5), VK2 (20), VK3 (19), VK4 (2), VK5 (19), VK7 (1) and ZL3TY. Albany has never been renowned for extensive Es openings so to make it to VK4 and ZL, both very long distance paths, has helped to make 1993 memorable. There were five 144 MHz contacts all to VK5 and one heard report to VK3AOS.

Ron VK4BRG at Sarina has had some good openings on both six and two metres. On 4/12 between 0120 and 0241 he worked VK6RO, VK8ZCU, VK8ZLX, VK6PA and VK4SIX at Mount Isa. 5/12: 0151 FK8DH. 8/12: 0210 P29CW, 0214 FK8DH, 0219 ZL1MQ, all on six metres. Alerted by Norm VK3DUT that he was copying the Brisbane two metre beacon at S9, Ron went on to work VK7ZMF at 2315 and during the two metre opening which lasted until 0137 he worked VK2 (1), VK3 (23), VK5 (3) and VK7 (1) all around 144.100. Ron said it was obvious who were the "big gun" stations but he was impressed with the S5 signal from VK3ALM who used 25 watts to an X-500 vertical antenna! Also, the Sarina repeater on 146.675 was accessed at 0135 by Bill VK5ACY on Kangaroo Island.

1994 got off to a good start. From 2100 on 1/1 (actually 31/12 UTC day) **Wally VK4DO** at Proserpine worked many ZLs in their four districts. As it was his birthday I called him and he advised me that on 28/12 he had copied the FO5DR beacon on 50.049 for over 2 hours.

Steve VK3OT also copied the above beacon and did so again on 2/1 as did Trevor VK5NC where it was received at 579 for 25 minutes at 0340. The operator's name is René and his telephone number is 689 4816 12. The distance to Tahiti from Melbourne is about 7500 km or 4500 miles but the signals still arrive in Australia. All this leads me to say once again, if you have moth-balled your six metre gear until the next cycle, then you are going to miss some good contacts.

EME News

John Martin VK3ZJC/KWA stayed up late for the November EME weekend and

QSP News

1993 Amateur Radio Awards

Amateur Radio magazine, as members know, is a magazine of the members, for the members of the organisation which represents the Australian amateur service both nationally and internationally.

Some of the interesting and original articles which appear in *Amateur Radio* are republished in overseas publications but this is not the only tribute which authors of articles submitted to the WIA magazine receive. Every year the WIA Publications Committee selects winners of three annual magazine awards. The task of the Publications Committee was not an easy one this year considering the wide range of quality articles published in our magazine over the past 12 months.

However, at the Publications Committee meeting held on 6 December 1993 the annual *Amateur Radio* awards were allocated. The eventual winners were selected after much consideration by that committee.

The **Al Shawsmith Journalistic Award,** presented for an article on a radio theme considered best to display journalistic merit, was awarded to George Neilson VK3TES for his series of articles on the history of Kingsley Radio which appeared in the June, July and August issues of *Amateur Radio*. George receives an engraved wall plaque as well as a cheque for $100.00.

The **Technical Award,** for the best technical article(s) published during the year, was awarded to Lou de Stefano VK3AQZ for his articles on Packet Radio which were published in the July and November issues of *Amateur Radio* magazine. Lou receives a cheque for $100.00.

The **Higginbotham Award,** for meritorious service to amateur radio generally, was awarded to Ken Matchett VK3TL for his continuing contribution as Honorary Curator of the WIA QSL Card collection. Ken also receives a cheque for $100.00

Congratulations to George, Lou and Ken on winning these *Amateur Radio* Awards for 1993!

heard VE3ONT on both 432 and 1296 MHz. Signals seemed to be about 10 dB over the noise on 432 and slightly less on 1296. John made several calls but the heavy QSB left him with the uncertainty of whether he was heard — nevertheless, he considered it a worthwhile experience.

From the UK

The November report from **Ted Collins G4UPS** indicates a considerable reduction in activity as they enter their winter. He continues his daily CW propagation skeds with G3CCH and SM7AED and is most times successful.

Other contacts for the month were with areas covered by SM3EQY, 9A3FT, IK0FTA, F5LHI, EH3MD, EH1DVY and ES0SIX/b. It seems the European stations have put the dust covers on their six metre equipment while they wait for the next round of summer Es contacts, but what about the usual mid-winter Es, January there, July here?

Other News

An interesting snippet from **Scott Watson VK4JSR** who says he has recently installed a DSP9 filter by Timewave and highly recommends it for those interested in weak-signal VHF DXing. As an example he said that on 28/11 he was clearly able to copy the VK1s but with the unit switched out of line they were not there.

Closure

Everytime I start to end this month's columns some fresh news arrives — eg the VK5NC two metre contact to ZL1IU and VK4OE to ZL1. Don't forget to send in your Ross Hull and Field Day logs.

Closing with two thoughts for the month:

1. Those who fight fire with fire usually end up with ashes, and
2. We give advice by the bucket but take it by the grain.

73 from The Voice by the Lake.

*PO Box 169 Meningie SA 5264

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Sign up a new WIA member today — use the form on the reverse side of the AR address flysheet.

Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

Arthur	MEAD	EX VK2JM
J E	BURGESS	L40340
C A J	MALONEY	VK1NCX
P J	MCGRUDDY	VK1ZV
K M (Keith)	HUTCHISON	VK2DNA
B J (Basil)	BYRNE	VK2FRU
I W	ARCHIBALD	VK2KU
R V (Reg)	BULMAN	VK2YL
M J (Max)	MAUJEAN	VK4BCA
J N (John)	MARR	VK6BBR
P J	GROUSE	VK6XPG
D	MARCH	VK6ZN

Arthur MEAD ex VK2JM

Arthur obtained his AOCP in 1924 and then, due to licensing age requirements, had to wait until 1925 to gain his first licence A2JA and later OA2JA and VK2JA.

In 1929 he became interested in racing motor cycles with notable success, assisting in the site selection and formation of the current Mt Panorama circuit at Bathurst.

Arthur was again re-licensed at the end of WW2 with the call sign VK2AJA and subsequently VK2JM which he held just prior to his death. He was not very active in recent years, but after WW2 was an active experimenter on 2 and 6 metres and to a lesser extent 580 MHz. He was an inaugural member of the Croydon Radio Club from 1924 until its demise after WW2 and a member of the WIA from 1945. Greatest interest has always been CW as that was virtually the only means of communication from 1918 until he obtained his licence. He had an interest in the John Moyle National Field Day and took part every year for about 25 years mostly in the CW 6 Hour Single Operator and Emergency Powered Home Operator Sections.

Arthur planned and carried out the installation of the first masts on the NSW Divisions property at Dural. Arthur passed away 11 December 1993.

Allan Hennessy VK2RX

Reginald V Bulman VK2YL

Reg VK2YL (previously VK7RL/VK4YL) passed away suddenly after an extended illness in Armidale Hospital on 16 December 1993.

Reg was born in Mathinna Tasmania (1912) where his father kept a General Store. The family later moved to Legana (near Launceston) where Reg started his early school days and where the family became orchardists for many years. He became interested in radio when he was 9 years old (1921) due to an uncle who was a World War I veteran. The uncle was an Infantry Signalman, but learnt much of the progress of radio up to that time.

After leaving Legana school he went to the Launceston Grammar School to further his education and whilst there he built his first crystal set.

1930: After leaving College he was employed installing and servicing radio receivers, mainly Browning-Drake type, including radio sets of the Autodyne type. Apart from radio he did electrical wiring of homes and businesses while studying and building radio equipment in his spare time.

1938: Attended a Radio Mechanics Course, plus a course for Amateur Operators Certificate of Proficiency during evenings.

1940: Enlisted with the Citizen Military Forces as Signalman, carrying out duties pertaining to that section, later being transferred to the RAAF as Radio Mechanic.

1942: Posted to Richmond (NSW) for Radar training.

1943: Reg embarked for New Guinea (Port Moresby) where they set up and tested the assigned AW/LW Radar Unit. In Dec was posted to Goodenough Island Radar Station No 315.

1945: Reg returned to Civil occupation taking up an appointment with the PMG department (now known as Telecom), for 22 years.

1947: Was transferred to the Radio Telephone Link at Stanley on the NW Coast of Tasmania where he lived for many years. I am enclosing a small tribute to Reg written by one of his many friends and Scout Master of the District:- *I shall always cherish many happy memories of Reg's generous help with his technical skills, to me and the community at large — unforgettable times with the Scouts and Jamboree of the Air, he must have made a multitude of friends in the "ham world".*

Elsie Bulman

ar

Technical Correspondence

Vertical Antennas

I found Doc's (VK4CMY) article on vertical antennas to be quite interesting and generally correct. I also have a high regard for this type of antenna. However, I would like to make one or two comments. In part one, open wire line was suggested along with a tuner. Well, that might work, but seems a bit like feeding a dipole without a balun. Being an "unbalanced" antenna I think co-ax would be better, at least in theory anyway. *(Not so, Felix! "Balance" refers purely to how, or whether, the line is connected to ground. Tech Ed.)*

Secondly, Doc omitted to mention a simple method of increased radiator efficiency, the use of a folded quarter wave radiator. In a similar way to a simple folded dipole, this provides a four times step up in radiation resistance which, in turn, improves overall efficiency by reducing the loss effects of an imperfect ground system. A folded quarter wave radiator is easily made using open wire line on iron pipe, with a bit of mechanical ingenuity. It works! A 40 m antenna built on these lines (with only two slightly above ground resonant radials) worked consistently well.

Felix Scerri VK4FUQ
9 Garbutt Street
Ingham 4850

"UPDATE" in December AR

I became a little concerned about the reference to the AAPRA MODEM ADAPTOR in the above segment so checked again the circuit printed in November *Amateur Radio.*

I have written to Helmut VK3CHN confirming that the circuit is OK for my C64 but it now appears that all C64s are not precisely the same. The 9 V supply is floating in some, and referenced to ground in others.

Quite a trap and rather scary when one's computer suddenly stops working!

Murray Burford VK5ZQ
261 Belair Road
Torrens Park 5062

Hand-Held Problems

My Belcom LS202 two metre hand-held has been going nicely for a number of years but recently stopped, receive OK but no transmit. Investigation revealed that the RF output transistor 2SC1947 was defective with collector open circuit. A 2SC1947 could not be obtained but an equivalent NTE488 (NTE Electronics Inc, Bloomfield NJ USA) was available from a local supplier.

While on equivalents, the Motorola MRF237 is also quoted as an equivalent for the 2SC1947, but the MRF237 has the collector to case while the 2SC1947 (and the NTE488) has the emitter to case. This makes the MRF237 almost impossible to heatsink in the LS202 with a "hot" heatsink.

Having got the unit back working, what caused the failure? Using the rubby ducky aerial supplied with the LS202, I was surprised to find the VSWR well in excess of 3:1, the last graduation on the VSWR meter. Continuity of the aerial winding (150 mm long) from the connector to the top of the sealed winding showed less than one ohm, so the aerial was not open circuited. I did not have the equipment to find where the aerial was resonant but set about changing its resonant frequency by applying iron dust and brass rings.

A brass sleeve 10 mm long, 0.5 mm thick, and of a diameter just sufficient to go over the aerial insulation, was located 30 mm from the top of the BNC connector. This reduced the VSWR to 1.25.

The conclusion is that, although the transceiver has only ever operated on a 7.8 V battery (the manual allows 12 V maximum to be used), the peak RF voltage generated across the mismatched aerial was sufficient to blow the transistor. The lesson from this must be to check the VSWR of rubby ducky aerials; something that I had not done before. It was assumed that the hand-held manufacturer would ensure that the aerial characteristics would be compatible with his products.

Rod Torrington VK3TJ
4 Thistle St
Pascoe Vale Sth VIC 3044

BT

Young Radio Operator Speaks to the World

Norm D'Angri VK3LBA tells of some good local publicity for amateur radio.

Dean Speedie literally has the world at his fingertips through his unusual hobby.

Dean (age 13) is believed to be the youngest amateur radio operator in Ballarat.

He was introduced to amateur radio a year ago by a friend and is now a member of the Ballarat Amateur Radio Group.

His call-sign is VK3LDS. He has already worked countries such as America, Japan and England.

Photo courtesy "Ballarat Courier"

BT

The "L" Network Aerial System Coupler

Lindsay Lawless VK3ANJ makes a technical point.

Many words have been written recently about "L" Network aerial couplers. The following information is derived from the theory.

Refer to Figure 1. The terminals b-b are the high resistance (R2) terminals and the terminals a-a are the low resistance terminals. If the ratio R2/R1 is N, and greater than unity, then:

Reactance A = ($\sqrt{}$N-1) x R1 Ohms.....(1)

Reactance B = (N x R1/$\sqrt{}$N-1) Ohms.....(2)

If the Tx load resistance is higher than the aerial resistance, connect the Tx to terminals b-b and the aerial system to terminals a-a.

If the Tx load resistance is lower than the aerial system resistance, connect the Tx to terminals a-a and the aerial system to terminals b-b.

Here is some less practical information:-

$Q = \sqrt{(N-1)}$

$A \times B = R1 \times R2 = N \times (R1)^2$.

The L network, the T network, the PI network and the T-PI network are the basic networks for most aerial system couplers and date from the 1920's. The mathematical reasoning which justifies their operation is simple, about ARRL Handbook level, and illustrates the power of even simple maths to discover useful, practical things, which can never be discovered by empirical dabbling.

The "L" network usually cannot be used without a supplementary network, inserted between aerial system and coupler, because most aerial systems present a complex impedance at the input terminals. The role of the supplementary network is to correct the power factor to unity at the system input terminals

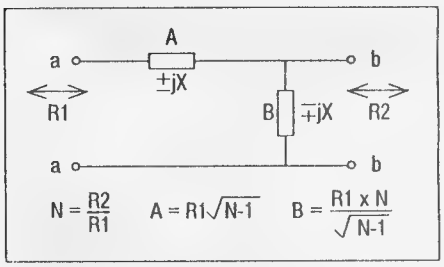

Fig 1 Basic L Network.

(ie to cancel any reactive component — Ed). The other networks can be used without the supplementary network and all can be used in a balanced form.

The original Collins "Universal Coupler" (circa 1935) was a balanced PI network. The capacitor C1 in both versions of the "Z" Match is the series reactance (A in Fig. 1) of an "L" network. The useful resistance matching range of C1 can be calculated using Statement (1). The networks following C1 must transform the coupled resistance to a value within that range and correct the coupled impedance power factor to unity.

PO Box 760 Lakes Entrance Vic 3909.

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The Fiddler (The anguish of an XYL)

By Marilyn Williams (XYL of VK2BUI). Some of us may recognise ourselves in this heartfelt lament!

He's a child, he's an infant,
a kind of jackeroo.
He's got to have a fiddle,
a look at all you do.
It's endless curiosity
that drives this fellow on,
as he twists and turns and fiddles
in his search for what is wrong.

He spots a new appliance
and must figure how it works.
He pokes away in silence,
solving all the mysteries first.
And then he studies detail,
the subtleties and gears,
emerging with the pieces
deemed unnecessary. Cheers!

"Y'see the darn thing can work
without those other bits".
It's just as well it is so,
since he can't find where they fit!
So they go into the big box
which overflows with junk.
I'm loathe to dump it at the tip
lest something else goes clunk!

So when another fails,
I hope that bit's in stock.
Starting in his box of tricks
he ends back at the shop!
It's a never ending story
though I hope the time is near,
one day he might just use those bits
and then perhaps I'll cheer.

ar

A Call to all Holders of a Novice Licence

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7 to 9pm Wednesday

HF PREDICTIONS

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

μV in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland.

VK SOUTH Southern-NSW, VK3, VK5 and VK7.

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used to make these calculations is 36.4. The predicted sunspot number for March is 36.0.

VK EAST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	12.7	8	8.9	8	1	-9	-26	...
2	12.5	4	9.6	5	1	-7	-22	-39
3	12.3	-1	9.3	2	0	-8	-22	-38
4	14.7	1	11.1	0	2	-2	-11	-23
5	18 8	5	13.6	-1	5	4	-1	-9
6	19 7	5	13.8	-2	4	4	0	-8
7	19 9	5	13.9	-2	5	4	0	-8
8	19 9	5	13.9	-1	5	5	0	-8
9	18 9	7	13.9	2	7	5	-1	-10
10	17.7	8	13.9	6	7	4	-4	-15
11	16.3	9	13.0	8	7	2	-8	-21
12	14.9	11	11.9	11	7	-1	-14	-29
13	14.0	14	11.2	14	6	-3	-19	-37
14	13.3	18	10.5	17	5	-6	-24	...
15	12.7	23	10.0	19	4	-10	-31	...
16	12.2	26	9.5	19	2	-14	-37	...
17	11.6	28	9.0	18	0	-18	...	...
18	11.1	30	8.5	17	-3	-23	...	...
19	10.8	30	8.2	16	-5	-26	...	...
20	11.4	30	7.9	18	-2	-21	...	...
21	11.0	27	7.5	14	-5	-24	...	...
22	10.6	20	7 3	10	-8	-26	...	...
23	10.4	14	7.3	7	-8	-25	...	...
24	11.1	10	7.8	7	-5	-19	...	...

VK EAST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	26 2	13	20 0	16	20	19	15	9
2	25.9	13	19.7	15	19	18	14	8
3	26.5	13	20.6	15	20	19	15	9
4	27 2	13	20.7	16	21	20	16	11
5	28.2	13	21.5	18	22	22	18	13
6	28.5	15	22.6	21	25	24	21	15
7	27.3	16	22.3	25	27	25	20	14
8	25.8	18	21.6	31	30	26	20	12
9	24.4	20	19.7	38	33	27	19	9
10	22.7	21	18.2	39	32	25	15	4
11	21.3	22	17.0	39	30	22	11	-1
12	20.6	22	16.4	39	30	21	8	-5
13	19.8	23	15.7	39	29	19	6	-9
14	18.9	24	15 4	38	26	16	1	-14
15	17.7	24	13.9	36	23	11	-4	-22
16	16.6	25	13.0	33	19	6	-11	-31
17	15.2	26	11.7	29	13	-2	-23	...
18	13.5	27	10.4	23	4	-14	...	...
19	11.5	27	8.8	11	-15	...	...	...
20	10.4	27	8.0	3	-28	...	...	...
21	14.3	20	10.8	21	5	-11	-33	...
22	21.4	16	16.6	26	22	16	7	-4
23	24.3	15	19.3	22	23	20	14	6
24	24.8	14	20.1	18	21	19	14	7

VK EAST — EUROPE

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.7	-4	7.6	1	-9	-23	...	...
2	8.9	-12	7.0	0	-10	-24	...	...
3	9.0	-15	7.1	0	-9	-21	...	...
4	10.5	-11	8.1	0	-4	-13	-29	...
5	13.5	-3	10.8	-2	0	-5	-15	-29
6	16.8	2	13.4	-3	2	0	-6	-15
7	19.4	5	15.6	-3	4	4	0	-7
8	21.1	7	17.0	0	7	7	4	-3
9	22.4	11	18.1	6	12	12	7	1
10	22.2	15	17.9	16	19	16	11	4
11	20.6	18	16.6	23	22	17	9	0
12	19.2	21	15.4	28	23	16	6	-5
13	18.5	23	14.7	31	24	16	4	-8
14	17.7	25	14.0	33	24	15	2	-12
15	16.9	26	13.3	33	23	12	-1	-17
16	16.0	27	12.5	32	20	9	-7	-24
17	14.7	26	11.6	28	13	-1	-20	...
18	12.8	27	10.0	22	3	-13	-37	...
19	11.3	28	8.8	15	-6	-27	...	...
20	10.5	29	8.2	11	-13	-36	...	...
21	10.1	26	7.8	7	-16	...	...	...
22	9.6	19	7.4	5	-15	-36	...	...
23	10.0	9	7.8	4	-12	-30	...	...
24	10.1	3	7.9	3	-10	-25	...	...

VK EAST — EUROPE (Long Path)

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10 3	-4	7.7	2	-5	-16	-33	...
2	10.3	0	7.8	3	-5	-17	-35	...
3	10.4	4	8.0	5	-5	-18	-38	...
4	10.0	8	7.7	5	-8	-23	...	...
5	9.2	11	7.2	3	-14	-32	...	...
6	9.2	17	7.3	4	-15	-35	...	...
7	10.9	23	8.6	13	-5	-22	...	...
8	14.0	23	11.2	23	10	-2	-20	...
9	13.0	22	9.9	20	9	-2	-18	-37
10	12.6	13	9.6	13	5	-4	-18	-35
11	14.8	8	11.8	7	6	0	-10	-23
12	14.0	1	11.1	1	2	-2	-11	-24
13	13.4	-5	10.8	-2	0	-4	-12	-24
14	12.8	-9	9.9	-4	-1	-4	-13	-24
15	12.2	-13	9.4	-5	-2	-5	-14	-25
16	11.6	-17	8.8	-6	-2	-6	-14	-26
17	11.3	-19	8.5	-5	-2	-6	-15	-27
18	11.8	-16	8.8	-6	-2	-5	-14	-25
19	13.8	-9	10.9	-7	-1	-3	-10	-19
20	15.2	-5	11.8	-7	-1	-2	-8	-17
21	13.2	-7	10.2	-4	-1	-4	-13	-25
22	11.7	-9	8.9	-1	-2	-8	-19	-34
23	10.8	-9	8.3	0	-3	-11	-24	...
24	10.4	-7	7.8	1	-4	-14	-29	...

VK EAST — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.9	-3	7.5	1	-9	-23	...	...
2	9.4	-11	7.2	0	-9	-22	...	...
3	12.5	-4	9.7	0	-1	-8	-21	-37
4	18.6	4	14.3	-3	4	3	-2	-10
5	24.2	7	18.5	-7	5	7	6	2
6	26.4	8	20.0	-8	5	9	9	6
7	26.0	9	20.6	-7	6	9	9	6
8	25.0	9	20.4	-4	7	10	9	5
9	23 7	10	19.7	2	11	12	9	4
10	22 2	12	17.9	9	14	13	9	2
11	20 6	15	16.5	17	18	14	7	-1
12	19.2	18	15.3	23	20	14	5	-6
13	18.4	21	14.6	29	22	14	3	-10
14	17 6	24	13.9	32	23	13	0	-14
15	16.8	25	13.6	32	22	11	-3	-18
16	15.9	27	12.4	32	20	8	-7	-25
17	15.1	28	11.7	30	17	5	-12	-31
18	14.0	28	10.8	28	13	-1	-20	..
19	12.9	29	9.9	24	8	-8	-29	..
20	13 0	29	9.8	25	8	-7	-29	..
21	14.6	26	11.1	28	14	1	-17	-37
22	11.8	21	9.1	15	0	-16	-39	..
23	11.6	15	9.0	11	-2	-16	-38	..
24	12.1	9	9.1	8	0	-12	-30	..

VK EAST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18 1	21.2	24.9	28.5
1	27.3	26	22.6	35	36	34	29	23
2	27.9	26	23 0	36	37	35	30	25
3	28.0	26	23.0	37	37	35	31	25
4	27.7	26	22.7	38	38	36	31	25
5	27.1	27	22.1	41	39	36	31	24
6	26.0	29	21.1	44	41	37	31	23
7	24.5	31	19.8	48	43	37	30	21
8	22.9	32	18.4	49	42	36	27	17
9	21.1	33	16.9	48	40	33	23	12
10	19.6	35	15.6	47	38	30	19	7
11	18.7	36	14.8	46	37	28	16	3
12	17.8	36	14.1	45	36	26	13	0
13	17.0	37	13.4	44	34	23	10	-4
14	16.1	38	12.5	43	31	20	5	-9
15	15.2	38	11.8	41	29	17	1	-15
16	14 1	40	10.8	39	25	12	-4	-23
17	12.9	41	9.9	36	20	6	-12	-33
18	13.0	40	9.8	36	20	6	-12	-32
19	15.5	34	11.6	37	27	16	2	-13
20	19 5	30	14.9	38	33	26	16	5
21	22 8	28	17.6	37	35	31	24	15
22	24 2	27	19.0	36	35	32	26	18
23	24 9	26	20.0	35	35	32	27	19
24	26.1	26	21.2	35	35	33	28	21

VK EAST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	21.0	7	15.9	0	7	7	2	-4
2	18.7	8	14.1	5	8	5	-1	-11
3	16.5	10	12.4	9	8	2	-8	-21
4	14.8	12	11.1	13	7	-2	-16	-32
5	13.9	16	10.4	16	6	-5	-22	...
6	13.3	21	10.0	19	5	-8	-28	...
7	12.9	25	9.8	20	4	-11	-33	...
8	12.7	26	9.5	21	3	-13	-36	...
9	12.5	28	9.4	21	2	-14	-39	...
10	11.5	29	8.7	17	-3	-23	.	...
11	9.9	30	7.6	9	-16	...	.	...
12	9.6	31	7.4	7	-19	...	...	...
13	12.0	29	9.0	20	0	-18	..	...
14	11.8	28	9.1	18	-1	-20	...	...
15	10 6	20	8.2	10	-9	-28	...	...
16	14.1	16	10.8	16	8	-2	-18	-36
17	12.8	9	9.8	9	2	-8	-24	...
18	12.7	2	9.6	4	0	-8	-22	-39
19	15.2	2	11.4	0	3	-1	-10	-22
20	19.2	5	14.7	-4	4	4	0	-7
21	22.3	6	17.3	-7	4	6	4	0
22	23.6	7	18.6	-8	4	7	6	2
23	24.3	7	19.1	-7	5	8	7	3
24	23.4	7	17.7	-4	6	8	5	0

VK SOUTH — ASIA

UTC	MUF	dBU	FOT	14.2	18 1	21.2	24.9	28.5
1	13.1	14	9.4	13	5	-5	-22	...
2	13.1	10	9.9	10	4	-6	-21	-39
3	15.7	9	12.3	9	8	2	-8	-22
4	19.9	9	14.2	7	10	8	1	-7
5	20.6	8	14.7	4	9	8	2	-5
6	20.7	7	14.8	2	8	7	2	-5
7	20.7	7	14.8	1	8	7	2	-5
8	20.6	7	14.6	2	8	7	2	-5
9	20.3	8	14.4	4	9	7	1	-6
10	19.4	9	13.7	7	10	7	0	-9
11	18.2	10	12.8	10	10	6	-2	-13
12	16.7	12	11.7	13	10	3	-7	-20
13	15.2	14	10.7	15	9	0	-13	-29
14	14.1	18	9.8	18	7	-4	-20	...
15	13.3	22	9.2	20	6	-8	-27	..
16	12.6	25	8.7	20	3	-12	-35	.
17	11.9	27	8.3	19	0	-17	...	..
18	11.4	29	8.0	17	-3	-22	...	.
19	11.1	30	7.8	16	-5	-25	.	..
20	11.2	30	7.9	17	-4	-24	...	.
21	11.7	29	8.1	19	-1	-19	..	
22	11.3	25	7.9	15	-3	-22	..	
23	11.2	19	7.9	12	-4	-21	...	..
24	12.0	16	8.5	12	0	-15	-35	.

VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.0	11	16.0	11	13	10	2	-7
2	20.5	11	16.7	10	13	10	3	-5
3	21.0	11	17.4	9	13	11	5	-4
4	21.1	11	17.4	10	13	11	5	-3
5	21.1	12	17.3	11	14	12	5	-3
6	21.0	13	17.2	13	15	12	5	-3
7	20.6	14	16.8	17	17	13	5	-4
8	20.0	16	16.2	22	19	13	4	-7
9	18.9	21	15.3	31	23	14	1	-12
10	17.7	22	14.2	32	21	10	-4	-21
11	16.3	23	13.1	30	17	4	-13	-33
12	15.1	24	12.0	27	12	-3	-24	...
13	14.3	25	11.4	25	8	-9	-31	...
14	13.6	25	10.8	23	4	-14	-39	...
15	13.1	26	10.3	20	0	-20	...	...
16	12.5	26	9.8	18	-5	-26	...	...
17	11.9	26	9.3	14	-9	-32	...	...
18	11.3	26	8.7	10	-16	...	...	...
19	10.1	25	7.8	-2	-36	...	...	...
20	9.2	26	7.1	-12	...	...	...	...
21	12.7	20	9.6	13	-7	-27	...	...
22	15.9	16	12.1	18	10	0	-15	-33
23	18.3	13	14.2	16	13	7	-3	-15
24	19.5	12	15.4	13	14	9	1	-9

VK SOUTH — USA/CARIBBEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	22.7	8	17.1	0	8	9	6	0
2	20.2	9	15.3	5	10	8	2	-5
3	17.9	11	13.5	10	11	6	-2	-14
4	16.1	13	12.2	14	10	3	-9	-23
5	15.1	16	11.4	18	10	0	-14	-31
6	14.5	20	10.9	21	10	-1	-18	-37
7	13.9	24	10.6	24	9	-4	-24	...
8	13.5	26	10.2	24	8	-7	-27	...
9	13.2	27	10.0	23	7	-9	-31	...
10	11.9	29	9.1	19	0	-19	...	...
11	10.1	30	7.7	10	-14	-38	...	...
12	9.7	31	7.5	8	-18	...	...	...
13	12.4	28	9.3	21	2	-15	-39	...
14	12.6	27	9.7	22	5	-10	-33	...
15	12.3	21	9.4	17	2	-12	-33	...
16	12.4	13	9.4	11	1	-11	-29	...
17	11.9	4	9.0	5	-1	-12	-29	...
18	12.4	0	9.3	2	-1	-9	-23	...
19	14.6	0	11.5	0	1	-2	-12	-24
20	17 7	2	13 3	-4	3	2	-3	-11
21	20.5	4	15 6	-7	3	4	2	-4
22	22.0	5	17.1	-9	3	5	4	-1
23	22.6	6	17.9	-8	4	6	5	0
24	23.0	8	18.6	-5	6	8	6	1

VK WEST — EUROPE (Long Path)

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.2	-19	7.0	-3	-8	-19	-35	...
2	9.2	-15	7.1	-2	-10	-21	-39	..
3	9.1	-11	7.0	-2	-12	-24	...	.
4	8.8	-8	6.9	-2	-15	-29	.	.
5	8.2	-6	6.4	-4	-20	-38	.	. .
6	8.2	-1	6.5	-4	-22	...	.	.
7	9.6	8	7.6	1	-16	-34	..	..
8	11.9	13	9.5	9	-4	-18	-38	.
9	14.7	15	11.7	16	6	-4	-19	-37
10	13.3	16	10.3	14	4	-7	-24	..
11	10.6	10	8.2	6	-7	-22	...	.
12	10.5	3	8.0	3	-7	-20	-39	.
13	13.8	2	9.4	3	1	-5	-17	-31
14	13.0	-5	8.8	-2	-2	-7	-17	-31
15	12.3	-11	8.5	-5	-4	-8	-18	-30
16	11.8	-16	8.0	-6	-4	-9	-18	-30
17	11.2	-19	7.7	-7	-5	-9	-18	-31
18	10.8	-24	7.4	-8	-6	-10	-20	-33
19	10.7	-26	7.4	-9	-7	-12	-22	-35
20	11.4	-20	7.9	-7	-5	-8	-17	-29
21	11.7	-17	8.9	-7	-5	-9	-18	-30
22	10.4	-28	8.1	-10	-10	-16	-29	...
23	9.7	-32	7.5	-11	-13	-21	-35	...
24	9.2	-29	7.1	-8	-12	-22	-37	...

VK SOUTH — EUROPE

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.4	2	8.1	3	-7	-21	...	...
2	9.5	-7	7.4	0	-9	-23	...	...
3	9.5	-12	7.5	0	-7	-19	-38	...
4	11.3	-8	8.6	0	-3	-11	-25	...
5	14.7	-2	11.7	-3	0	-2	-11	-22
6	18.4	2	14.7	-6	2	2	-2	-10
7	21.0	5	16.9	-8	3	5	2	-3
8	21.7	7	17.7	-7	4	7	5	0
9	21.1	7	17.1	-3	6	7	5	-1
10	20.0	9	16.2	3	9	9	4	-3
11	18.7	12	15.0	10	12	9	2	-7
12	17.2	16	13.8	18	15	8	-2	-14
13	15.8	20	12.6	23	15	6	-8	-24
14	14.9	24	11.9	26	14	3	-13	-32
15	14.2	26	11.2	26	12	0	-19	...
16	13.6	27	10.7	25	10	-4	-24	...
17	13.1	29	10.2	24	8	-8	-30	...
18	12.5	29	9.7	23	5	-12	-36	...
19	11.9	29	9.1	19	0	-19	...	...
20	11.2	29	8.6	15	-7	-28	...	...
21	10.7	29	8.2	13	-11	-33	...	...
22	9.7	24	7.5	5	-19	...	...	...
23	9.6	15	7.5	3	-17	-38	...	...
24	10.9	10	8.4	7	-7	-22	...	...

VK WEST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.8	18	8.8	13	-1	-17	-39	...
2	12.4	14	9.4	12	2	-10	-28	...
3	14 9	12	11.7	12	8	0	-13	-28
4	19.1	11	14.7	11	12	9	1	-9
5	21.0	9	15.5	8	11	9	3	-5
6	21.0	9	17.1	5	10	8	3	-5
7	20.9	8	17.1	4	9	8	2	-5
8	20.9	8	17.0	4	9	8	2	-6
9	20.6	8	16.8	5	10	8	2	-6
10	20.1	9	16.3	7	10	8	1	-8
11	19.1	10	15.7	10	11	7	0	-11
12	17.8	12	14.3	14	12	6	-4	-16
13	16.4	16	13.1	18	12	4	-9	-24
14	15.0	19	12.0	21	11	0	-16	-35
15	14.1	23	11.2	23	10	-3	-23	...
16	13.4	26	10.6	23	7	-7	-29	...
17	12.8	28	10.3	22	5	-12	-35	...
18	12.2	29	9.5	21	2	-16	...	...
19	11.7	30	9.1	19	-1	-20	..	...
20	11.2	30	8.6	17	-4	-25	...	...
21	10 9	31	8.2	16	-6	-28	...	...
22	11 5	30	8.6	18	-2	-22	...	...
23	11.9	29	9.1	20	0	-18	...	...
24	11.3	23	8.6	14	-3	-21	...	...

VK WEST — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.1	9	7.0	-1	-23	...	...	.
2	8.6	-2	6.6	-4	-23	...	...	.
3	11.6	1	8.6	2	-6	-18	-37	..
4	17.3	6	13.4	4	6	1	-7	-19
5	22.5	7	16.9	1	8	8	4	-2
6	22.8	8	18.1	-1	8	9	6	0
7	22.9	7	18.8	-2	7	8	5	0
8	22.8	8	18.7	-2	7	8	5	0
9	22.4	8	18.3	0	8	9	5	0
10	21.7	9	17.6	3	10	9	5	-2
11	20.6	11	17.1	9	12	10	4	-4
12	19.3	14	15.5	17	15	10	2	-9
13	17.8	18	14.3	24	17	9	-2	-16
14	16.5	23	13.2	29	18	7	-8	-25
15	15.8	24	12.5	29	16	4	-12	-31
16	15.1	25	11.9	28	14	1	-17	-37
17	14.5	26	11.7	27	12	-2	-22	
18	13.8	27	10.8	25	9	-7	-28	.
19	13.1	27	10.2	23	5	-11	-34	.
20	12.3	28	9.5	20	0	-18	.	
21	11.5	28	8.8	16	-5	-26	.	. .
22	11.7	28	8.9	17	-3	-23	...	
23	11.5	27	8.8	15	-6	-26	...	...
24	11.2	21	8.6	11	-8	-27	..	...

VK SOUTH — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.9	1	7.6	2	-10	-26	...	...
2	9.2	-9	7.1	0	-11	-26	...	...
3	12.6	-2	9.4	1	-1	-9	-22	-38
4	19.2	5	14.8	-1	5	4	-1	-9
5	22.7	7	18.6	-6	5	7	5	0
6	22.7	6	18.6	-8	4	6	5	0
7	22.6	6	18.4	-8	4	6	5	0
8	22.3	6	18.1	-7	4	7	5	0
9	21.7	7	17.6	-3	6	7	4	-1
10	20.6	9	16.7	3	9	8	4	-3
11	19.2	11	15.5	10	12	9	2	-7
12	17.7	15	14.2	17	14	8	-1	-14
13	16 2	19	13.0	23	15	6	-7	-23
14	15.3	23	12.1	26	15	3	-13	-31
15	14.5	25	11.5	26	13	0	-18	-39
16	13.9	27	10.9	25	10	-4	-24	...
17	13.3	28	10.4	24	8	-7	-29	...
18	12.7	28	9.8	23	5	-11	-35	...
19	12.2	29	9.3	20	1	-16	...	...
20	11.8	29	8.9	19	-1	-20	...	...
21	12.3	28	9.2	21	2	-15	-39	...
22	14.0	25	10.7	24	11	-1	-20	...
23	13.5	20	10.4	19	8	-4	-22	...
24	12.4	14	9.4	12	0	-12	-32	...

VK WEST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	23.4	14	18.6	18	20	18	12	4
2	23 9	14	19.3	16	19	18	12	5
3	25.1	13	19.1	15	19	18	13	7
4	25.7	13	19.5	15	20	19	14	8
5	26 4	14	20.1	16	21	20	16	10
6	27.4	14	20.9	18	22	22	18	12
7	27.3	16	22.0	21	24	23	19	14
8	26.7	17	21.8	25	26	24	20	13
9	25.6	18	20.9	31	29	26	19	12
10	24.2	21	20 2	41	34	28	19	10
11	22.8	22	18.4	41	33	26	16	5
12	21.2	22	17.0	40	31	22	11	-2
13	19.8	23	15.8	39	28	18	5	-10
14	19.0	23	15.1	38	26	16	1	-14
15	18.3	23	14.4	36	24	13	-2	-20
16	17.4	24	14.1	35	21	9	-7	-26
17	16.5	24	12.9	32	17	4	-14	-35
18	15.5	24	12.1	30	13	-1	-22	...
19	14.3	25	11.1	25	7	-11	-35	...
20	11.4	25	8.8	8	-20	...	...	...
21	10.3	26	8.0	-1	-35	...	...	...
22	14.2	22	11.1	22	4	-14	-38	...
23	19.3	16	14.9	24	19	12	1	-12
24	22.4	15	17.5	21	21	17	10	1

VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	21.9	12	17.4	14	16	13	7	-2
2	22.3	12	18.0	14	16	14	7	-1
3	22.6	12	16.7	14	17	14	8	0
4	22.6	13	18.6	16	18	15	9	0
5	22.5	14	18.5	18	19	16	9	0
6	22.5	15	18.3	22	22	17	10	0
7	22.2	17	18.0	28	25	19	11	0
8	21.4	20	17.3	33	27	20	10	-1
9	19.9	22	16.0	36	27	19	7	-6
10	18.3	24	14.7	36	25	15	1	-14
11	16.9	26	13.5	34	22	11	-5	-22
12	16.0	27	12.7	33	20	7	-9	-28
13	15.2	28	12.0	31	17	3	-15	-36
14	14.4	29	11.4	30	14	0	-20	.
15	13.8	29	10.9	28	11	-4	-25	.
16	13.2	30	10.3	26	9	-7	-30	.
17	12.6	31	9.6	24	6	-11	-35	. .
18	12.0	32	9.1	22	2	-16	...	.
19	11.7	26	8.8	17	-1	-19	..	.
20	12.2	20	9.2	16	1	-14	-36	.
21	14.3	16	11.3	16	8	-3	-19	-38
22	17.3	14	13.1	16	13	6	-5	-19
23	19.9	13	15.3	16	15	11	2	-8
24	21.3	13	16.7	15	16	13	6	-3

VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	18.3	15	14.8	20	16	8	-3	-18
2	18.5	16	15.3	21	17	9	-2	-17
3	18.5	16	15.2	22	17	9	-2	-17
4	18.5	17	15.1	23	18	10	-2	-17
5	18.4	18	15.1	25	19	10	-2	-17
6	18.2	20	14.8	28	20	11	-3	-19
7	17.7	22	14.4	32	21	10	-5	-23
8	16.8	25	13.6	33	20	7	-10	-29
9	15.6	26	12.5	31	16	2	-18	...
10	14.4	28	11.5	29	11	-5	-28	...
11	13.3	29	10.7	25	5	-14	...	...
12	12.6	30	10.0	22	0	-20	...	...
13	11.9	30	9.5	19	-4	-27	...	...
14	11 4	31	9.0	16	-9	-33	...	...
15	10 9	32	8.5	13	-13	-39	...	...
16	10 4	32	8.1	10	-18	...	...	. .
17	9.9	33	7.6	6	-24	...	...	. .
18	9.6	32	7.3	3	-28	...	...	...
19	10.0	24	7.5	5	-21	...	...	. .
20	11.7	19	8.7	11	-7	-26	..	...
21	14.1	17	10.6	17	5	-8	-28	..
22	16.2	16	12.4	20	12	1	-14	-32
23	17.4	16	13.6	20	14	6	-7	-23
24	18.0	16	14.3	20	15	7	-5	-20

VK WEST — EUROPE

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.0	13	8.5	7	-9	-26	...	...
2	10 0	2	7.8	1	-13	-30	...	...
3	9 9	-4	7.8	0	-11	-25	...	...
4	11.9	-3	8.9	0	-4	-14	-29	...
5	15.6	1	12.5	0	2	-2	-11	-23
6	19.6	5	15.7	-3	4	4	-1	-8
7	22 4	6	18.1	-5	5	6	4	-1
8	24 1	7	19.6	-5	6	8	6	1
9	25.1	8	20.5	-4	7	9	8	4
10	24.2	9	19.7	0	9	11	9	4
11	22.9	11	19.0	6	13	12	9	2
12	21.5	14	17.3	16	17	14	8	0
13	19.9	18	16.0	24	21	15	6	-4
14	18.5	21	14.8	30	22	14	2	-10
15	17.7	23	14.1	32	22	13	0	-15
16	17.0	24	13.4	32	21	10	-4	-20
17	16.2	25	13.0	31	19	7	-8	-26
18	14.5	25	11.2	27	11	-3	-23	...
19	12.8	27	9.9	21	2	-15	-39	...
20	11.9	27	9.1	17	-3	-22	...	...
21	11.4	28	8.7	15	-7	-28	...	...
22	11.2	28	8.8	14	-8	-29	...	...
23	11.3	27	8.6	14	-7	-28	...	...
24	10.4	19	8.1	7	-13	-33	...	...

VK WEST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.8	6	15.7	-6	5	6	3	-2
2	18.5	6	13.9	-1	6	5	0	-8
3	16.2	6	12.2	2	6	3	-5	-15
4	14.5	7	10.9	7	6	0	-11	-25
5	13 6	9	10.1	10	5	-3	-16	-33
6	13.0	13	9.7	13	5	-5	-21	.
7	12.6	18	9.5	16	5	-8	-26	.
8	12.4	23	9.3	19	5	-9	-30	
9	12.3	27	9.3	21	5	-10	-33	
10	11.4	30	8.7	19	0	-18		
11	10.0	32	7.6	13	-11	-33		
12	9.8	33	7.5	12	-13	-36	.	
13	12.1	31	9.0	23	4	-13	-37	
14	14 4	29	11.2	30	16	3	-15	-35
15	11 6	25	9.0	18	2	-13	-36	
16	11.4	18	8.8	14	1	-13	-34	...
17	13.1	13	10.1	13	6	-4	-19	-37
18	12 4	5	9.5	7	2	-6	-20	-38
19	11.9	-2	9.0	3	0	-7	-20	-37
20	12.4	-5	9.3	0	1	-5	-16	-30
21	14.5	-2	11.5	-3	2	0	-8	-18
22	17.7	2	13.4	-8	2	3	-1	-8
23	20.4	5	15.7	-10	2	5	3	-2
24	21.8	6	17.1	-10	3	6	5	1

HAMADS

TRADE ADS

● AMIDON FERROMAGNETIC CORES: For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney: Webb Electronics, Albury: Assoc TV Service, Hobart: Truscotts Electronic World, Melbourne.

● WEATHER FAX programs for IBM XT/ATs *** "RADFAX2" $35-00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" $45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT" $75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add $3- 00 postage. ONLY from M Delahuntly, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

FOR SALE NSW

● KENWOOD 830S 500 kHz filter MC50 desk mike external speaker spare tubes original carton vgc $950. David Bell VK2BBT (043) 67 6688 evenings only.

● VHF DIPLEXER, 240 V 70 110 V @ 15 amp transformer, FRG-7, TH2 ant, PRC-9, PRC-10, B41, VTR5R. Neville VK2QF QTHR (063) 73 8624.

● HEWLETT PACKARD counter model 5245L $449; SCIENTIFIC devices counter model 1100 $89; HP VTVM model 410b $149; HP Signal generator model 618C $349; HP Sweep oscillator model 8690A $749. Peter VK2CPK (02) 605 4790.

● TOWER free standing professionally made, 22 metre with pole includes rotator $1200. Ron VK2BKN QTHR.

● BWD model 141 sine and square wave generator $40; BWD model 603D mini lab $100. Both as new. George VK2AHJ (02) 878 2278.

FOR SALE VIC

● ICOM 24AJ dual band handheld extras include BP84 powerpack 1/4 wave telescopic antenna CP12 CIG lighter pack $495; WELZ SP425 SWR power meter 140-525 MHz 150 w $50. Ted VK3TG (052) 59 3225.

● ICOM IC-275H 100 watt 2 m ssb base station in mint condition not a mark on it $2800 new, sell for $1500; CT-16 SATELLITE interface to suit Icoms $100; MFJ-1278 Multi-mode TNC $400. Paul VK3EPD (059) 83 1771.

● ICOM IC475H 70 cm allmode, brand new; ICOM IC720A HF with ICPS-15 power supply; KENWOOD TR751A 2 m allmode; SATELLITE Antennas and rotators. Heaps of other items. Urgent Sale open to offers. Theo VK3CTK (03) 543 3517.

● SATELLITE Receiver new in box, capable of receiving K or C band, Satellite TV supplied with K band low noise converter and feedhorn $250. Neil VK3BCU (03) 390 2609.

● KENWOOD TS850S current model HF xcvr with inbuilt ATU hand mic in vgc $2600; KENWOOD TS940S HF xcvr with in built ATU and hand mic in vgc $2600. Jim VK3NR (03) 367 6920.

● ICOM IC-725 HF all band transceiver mint $1250; ICOM AH-2 automatic remote antenna tuner with controller $525. Bill VK3WK (055) 65 9348 BH.

● KENWOOD TS930S HF xcvr excellent condition, great DX and CW rig $1650; KENWOOD 520S HF xcvr good condition $450. All mics and manuals. Geoff VK3ACZ QTHR (050) 24 5987.

● KENWOOD TS940 topline HF xcvr 6 years old in vgc with inbuilt ATU hand mic $2680. Jim VK3NR (03) 367 6920 Licensed amateurs only.

● PHILIPS FM321 435 MHz FM, 80 channel with owners manual $250; YAESU FT227R 144 MHz, 10 watt mobile, scanning microphone, good condition $275; YAESU RGM HF whips, 144, 28, 21, 27, gutter mount $80. K Clayton VK3KFC 6 Curtis Crt, Cranbourne Vic 3977.

● YAESU FT102 HF transceiver 150 w with new finals and YM38 desk microphone $1100; MATCHING FC-102 1.2 kW ATU with inbuilt FAS-4R 4-way antenna switch $400; MATCHING SP-102 external speaker with audio filters $150 or $1500 the lot. Craig VK3CRA (03) 551 5635.

● 100 FOOT fold down radio tower, dismantles into 22 ft sections and comes complete with a heavy duty winch $3000; 50 FOOT Southern Cross windmill tower, converted to a radio tower $500; NUMEROUS other pieces of amateur radio equipment. Richard Haggblom, 6 Avondale Ave, St Albans Vic 3021 (03) 366 4605.

FOR SALE QLD

● SWAP Ratcliffe RF sig gen 205 ex-DCA 0-180 MHz, Techtron sine wave gen ex-DCA, Philips EV 4436A pa 4x6 cms plus spares, hundreds HF valves, octals, miniatures for radio control aircraft or bits and pieces thereof. "Doc" VK4CMY (076) 85 2167.

● KENWOOD TS140 mobile rack $15; TANDY DMP105 printer with manual and cables $50; DATA Recorder suit C64 $20; VALVES, transmitting, receiving, renovators, collectors, tested, rectifiers, sockets, shields. Send A4 sase for list. Ted VK4YG QTHR (070) 97 6387.

● KCT & T card and software, never used $350. John VK4JON QTHR (070) 61 6904.

● YAESU FTDX401 outboard VFO FV401 speaker YD844 Yaesu desk mike all ec plus 35 spare new valves also 4 Toshiba used ok 6KD6 valves, valves value $600, Whole lot equip plus valves $700. Robby VK4YV (074) 43 8414.

● 2 x 12 El 2 m and 2 x 22 el 70 cm crossed yagis, c/w 9913 coax and fitting phasing harnesses. Relays. Six metre hinged tower and winches, good condition. Excellent performers $475 the lot. VK4PO QTHR (07) 843 0505.

● DSE PSU 13.8 V, 25 A peak capacity $100. HYGAIN 18AVT/WB 5 band vertical antenna $120; KENWOOD ATU AT-200 $150; MOSLEY HF trapped vertical antenna w/radials, data sheet $75; RADIO RECEIVER MANUALS -1937, 38, 39, 40/42, 46 $25 ea or $100 all; SHURE model 450 desk mic w/data sheet. VGC $85 or exchange ICOM SM-8 desk mic; VALVES 2 new 6JB6A (Drake C-line TX) $70; WAVE METER ex DOD gc $50; YAESU FT-1 xcvr ec with vg UA723-HB PSU $450. VK4SZ QTHR (070) 61 3286.

● LODESTAR signal generator model SG4160B 100 kHz 450 MHZ exc cond no further use $250 posted Australia. Gordon VK4KAL QTHR (079) 85 4168 evenings.

FOR SALE SA

● YAESU FT-107DM 140 w HF xcvr WARC. Memories, ext VFO, gc $800; KENWOOD TS-520S HF xcvr DC-DC converter gc $450 ono. Dale VK5AFO (08) 391 2330.

● ICOM W2A 2 m/70 cm dual band hand held xcvr c/w s/case and extra battery $600; YAESU FT-726R 6 m, 2 m, 70 cm all mode xcvr c/w sattelite module, MD-1 desk mic $1800 ono. VK5KCX (085) 22 4528.

FOR SALE TAS

● STANDARD AX-700 scanner receiver. professional quality, built in spectrum analyser, covers 50-905 MHz. W/FM, N/FM, AM. Mint cond. Cost $1075, sell $585. Allen VK7AN QTHR (003) 27 1191.

WANTED NSW

● 3-500Z Tx triode. VK2DM QTHR (049) 46 7674.

● COLLECTOR wants old and new Morse keys, magazines, books relating to Morse code. Need as much material as possible for future book. Top prices paid. Steve VK2SPS (02) 99 2933 aft 6pm.

● KENWOOD TS-120S or TS-130S in gc. Keith VK2AXN QTHR (02) 489 0304.

WANTED VIC

● YAESU FT-101ZD (with WARC bands) or Kenwood TS-830S. I will be disposing of an FT-101B. Ken VK3NJ QTHR (03) 561 4124.

● YAESU FT-747 or ICOM IC-735 or similar HF xcvr. Ron VK3OM QTHR (059) 44 3019.

● QSL cards. Please help along the WIA QSL collection with your donation. We need special issue card and USA counties but all are welcome. Ken VK3TL (03) 728 5350. Pickups can be arranged.

WANTED QLD

● CKT and OPERATING data for Palec industrial VTVM type TVM. Ckt & discription Plus alignment data for Heathkit Mohican GC1-A comm rx. Photocopy costs reimbursed. Dick VK4GOR QTHR (07) 379 1600.

● Wrecked FT-201 or VOX gain knob Q4 MFC6034, Q3 MFC 6020 IC's. work shop manual, ARs, Handbooks, Tech books, Substitution books, IC morse tutor, IC-211 or similar, two metre all mode. VK4YFF 1/124 Sheridan St, Cairns Qld 4870.

● CONDENSER, tuning, 150 pF/4000 V for linear construction; ICOM SM5 desk mike in gc; ICOM FL30, FL45 filters; RADIAL capacitor 400 V, 4.7 μF (13 mm dia). VK4SZ QTHR (070) 61 3286.

● AOR 2001 (25-550 MHz) or AOR 2002 Scanner. Send details to VK4JHM, 379-391 Middle Rd, Greenbank Qld 4001, (07) 800 6798.

● DIGITAL frequency counter for Yaesu FT101E. Henry VK4CQH (070) 92 1994.

MISCELLANEOUS

● PLEASE SEND some of your QSL cards to the WIA collection. Especially special issue call signs, pictorial cards and rare DX. Contact Ken VK3TL 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

ar

Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

Make:	Kenwood
Model:	TS-120V
Serial Number:	—
Type:	HF Transceiver
Modifications:	Engraved on back N674522
Stolen from:	Randwick NSW
Date:	16 December 1993
Reported to:	Randwick Police
Owner:	Albert Solomon
Callsign:	VK2NVS
Contact details:	02 398 5846

Make:	Yaesu
Model:	FC-700
Serial Number:	—
Type:	HF Antenna Tuner
Modifications:	Engraved on back N674522
Stolen from:	Randwick NSW
Date:	16 December 1993
Reported to:	Randwick Police
Owner:	Albert Solomon
Callsign:	VK2NVS
Contact details:	02 398 5846

ar

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.
*Eight lines per issue free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclose a mailing label from this magazine with your Hamad.
*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.
*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.
*QTHR means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.
*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.
Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.
Conditions for commercial advertising are as follows: $25.00 for four lines, plus $2.25 per line (or part thereof) Minimum charge — $25.00 pre—payable.

State: .....

Not for publication: ❑ Miscellaneous ❑ For Sale ❑ Wanted

Name:..... Call Sign: ..... Address: .....

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It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly.**

VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

TYPESETTING AND PRINTING:
Industrial Printing, 122 Dover Street, Richmond, 3121. Telephone: 428 2958
MAIL DISTRIBUTION:
R L Polk & Co Pty Ltd, 96 Herbert St, Northcote, Vic. 3070. Tel: (03) 482 2255

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Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

.....

Call Sign (if applicable):.....

Address:.....

.....

.....

State and Postcode:.....

WIA Morse Practice Transmissions

VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.950 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 1030 UTC on 3550 kHz

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz.

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The following items are available from your Division's Bookshop (see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price
ANTENNAS		
Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	$22.00
Ant. Compendium Vol 3 1st Ed. 1992	BR455	$37.00
Antenna Compendium Vol 2 — ARRL	BR292	$32.00
Antenna Impedance Matching — ARRL	BR257	$52.00
Antenna Note Book W1FB — ARRL	BR179	$26.00
Antenna Pattern Worksheets Pkt of 10	BR902	$3.00
Cubical Quad Antennas- Haviland — 1993	BR041	$37.50
Easy Up Antennas	MFJ38	$39.25
G-QRP Antenna Handbook — RSGB — 1992 1st Edition	BR452	$22.50
HF Antenna Collection — RSGB	BR391	$44.00
HF Antennas for all Locations — Moxon — 2nd Edition	BR188	$45.00
HF Antennas for all Locations — RSGB — 1993	BR088	$45.00
mntenna Compendium Vol 1 — ARRL	BR163	$26.00
Novice Antenna Notebook — DeMaw W1FB — ARRL	BR162	$20.00
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